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## */CROONIAN LECTURES,*

*Delivered at the Royal College of Physicians,*

By DR. ROUPELL,

May 1832.

### LECTURE I.

#### *On General Pathology.*

The pathology of the brain and nervous system formed the subject of the Croonian Lectures which were delivered during the last and three preceding years. The disorders of the brain and spine, as well functional as those connected with obvious organic changes, were then ably treated by Dr. Hawkins and Dr. Seymour.

It is my intention, in the present series, to extend this inquiry into the investigation of the morbid changes which take place in other important organs of the body; but first propose briefly to enumerate the different alterations to which the various tissues are subject, and to examine into those laws, as far as we have been able to ascertain them, which regulate the processes we term disease.

Pathology in its widest sense, while it embraces the consideration of the peculiar alterations in texture, and the different states of parts, which are observed in disordered conditions of our frame, and while it pursues the effect of such change upon the animal organization, and traces the sympathetic affections to which they may give rise, also contains within its province the investigation of the causes on which such alterations depend, and is immediately connected with the principles, and forms the basis, of therapeutics,—in each of which views I have imposed upon myself the task of regarding pathology, and shall treat first, of the “alterations of structure.”

The investigation of the causes of disease, and the endeavour to explain the symptoms by examination of the body after death, is a natural source of inquiry, and has been

made by physicians at distant periods. A treatise on some pathological changes was published in Italy upwards of three centuries ago; and the subject, at various periods since that time, has occupied the attention of many distinguished anatomists.

The comparative ignorance, however, of the earlier writers, as to the functions of our system, renders their works of little value at the present day. The fanciful theories with which their narratives are interwoven, give them little more merit than that of having afforded some of the steps by which we have ascended to our present knowledge. The labours of anatomists of later times, indeed, have elevated pathology almost to the rank of a new science, and, by properly directing our inquiry in this branch of study, give us ample reason to conclude, that the physiology of our system will ere long receive more complete elucidation, and the knowledge of the nature of disease extended, will in consequence materially improve the adaptation of our remedies.

The various functions of the human frame—the complication of its numerous organs, each destined for especial purposes—naturally turned the attention of physiologists to the investigation of the more simple forms of animated nature, by which much light has been thrown on the uses of individual parts, and which has enabled us to ascertain the lowest degree of organization necessary, and the processes immediately essential, to life. By observing the effects which physical causes are capable of producing on the lowest scale of existence, we learn some at least of the powers which modify and control the vital actions in the higher order of beings; and discover, as the result of this search, operations in most instances analogous to those perceived in the human frame.

We observe in plants, that under a certain combination of circumstances vivification commences; we notice in their growth a determinate form assumed, and we notice a regular period of perfection and decay; we perceive at returning seasons circulation

excited, respiration performed, nutrition effected, and see them suffering under disease, acutely sensible of variations in the temperature and constitution of the atmosphere, or in the nature of the nourishment which they imbibe from the soil. We notice that plants are subject to different states of activity and repose—that they possess and exhibit a property of irritability—that they are capable of certain processes of reparation on the receipt of injury—and that they are highly susceptible of, and differently affected by, the deleterious impressions of poisonous agents.

Dr. Turner and Dr. Christison have shewn, in their paper in the *Edinburgh Medical and Surgical Journal*, vol. 28, that the one-tenth of a cubic inch of muriatic acid gas, diluted with 20,000 times its volume of atmospheric air, destroyed all the leaves of vegetables exposed to its influence for twenty-four hours; and a laburnum thus acted on, though removed into good air, did not recover. The effect of sulphurous acid, and sulphuretted hydrogen gases, on vegetables, are nearly equally pernicious; and the impression of the mineral poisons, Mons. Marcet has shewn to be extremely marked: when only one-fifth of a grain of arsenic had been absorbed by a branch, it perished, and when a whole plant had been thus destroyed the injurious effect of the experiment was perceptible, not only on the subject of the experiment, but also on a neighbouring shrub with which it was accidentally in contact.

In the animal kingdom we find higher properties than those in vegetables; we find a constant circulation—a perpetual source of vital energy—a sensibility to more numerous sources of excitement. We perceive, in consequence, more complicated apparatus; we trace a nervous, a muscular, and a vascular system, acting upon appropriate and specific stimuli, yet mutually dependent on, and essential to, each other. We see the vascular system—the source of the more substantial materials of which the different parts are composed—we find it first in activity in fetal development, and trace in its after operations the vigour of life, and if not the origin, at least the means of addition of structure, and devastation in disease. The properties essential to this system, are, first, the movement in the extreme branches, by which fluids are conveyed—capillary circulation; and secondly, those processes by which parts receive their requisite support—the power of nutrition.

These are essential to life, and in their modifications, acting in conformity to established laws, we may detect all the changes incident to our frame. We watch in the embryo the oscillations of the vesicula umbilicalis. We detect the additional formation of the heart, and trace, in the regular development of the fetus, a series of changes corresponding to the order of forma-

tion in the different classes of organized structure; and we see, at certain periods, a progressive increase or decay of the various tissues of the frame; some at birth, having already completed their growth during uterine existence—as the *membrana pupillaris*; others disappearing soon after—as the thymus gland; others, as the muscles and nervous system of the animal life, requiring much to bring them to perfection; and all yielding to the increasing influence of time.

The process by which nutrition and growth are performed, is yet but imperfectly known. We are, indeed, aware that the particles of which the tissues are composed are separated from the blood, which requires for its supply substances already prepared for conversion into animal matter, by the changes undergone in vegetable life, or which have already been converted into animal matter by the process of assimilation. These substances, carried to every part of the system, are elaborated in the minuter capillary extremities; but, important as the ultimate changes which there take place must be, we are obliged to be satisfied with conjecture as to their exact and intimate nature.

According to Mons. Shültz, an active movement takes place in the small corpuscles of which the blood is composed, by a property of mutual attraction and repulsion.

The process of nutrition, in the opinion of Mons. Döllinger, consists in the separation of some of these particles, and the return of others which had already formed an integral part of the tissues; by which means the change of the original parts is effected. Some curious properties of the tissues have been ascertained by Mons. Dutrochet, who has endeavoured to search deeper into the ultimate state of parts during this interchange of particles. He observed the inclination which some substances have to pass through the tissues into the circulating vessels, and from the vessels again into the surrounding parts. By enclosing various fluids in a portion of intestine, secured at either end, and then immersing it in other liquids, he perceived that sometimes a current from without inwards resulted, at other times that a current from within outwards took place. He perceived that when the external fluids were drawn into the intestine, and a state of distention consequently induced, that a current in a contrary direction succeeded, and that the particles were then forced outwards. This state of determination to the interior of the vessels occurred when the intestine was empty, or contained a fluid of greater density than that without.

He observes, that this is not a mere capillary process—that this power of imbibition did not take place when the fluid contained in the intestine was in a putrid state,



or the portion of the intestine was not in a state of integrity; nor was it entirely a chemical change, effected by the attraction of the two fluids, as these currents were established between two liquids, which in contact, without the interposition of membrane, exerted no influence whatever on each other. According to his observation, nutritive substances readily passed through the tissues, and, in proportion to the power of this determination inwards, nutrition is performed. The chemical nature of fluids, he observes, influenced these affinities: alkaline substances induce absorption, the current inwards, while acids diminish this power, determining the current to without. At present we possess but little knowledge of the actual process which excites absorption; we know not the reason why lacteals take up chyle alone, or what urges the secreted fluids to seek their exit from the frame, but feel that some powerful influence must be exerted in determining the vessels either to reject or to take up certain substances; as we see the bladder unable to absorb the fluid it has secreted, and the cæcum to resist the passage of fecal matter through its coats, although active absorption would take place if other matters had been in contact with these mucous surfaces. This inquiry is, as yet, far from having been satisfactorily elucidated, and the experiments of Mons. Dutrochet require confirmation; suffice it, that rapid motion of the particles of the blood seems essential to its integrity, and that the increase, removal, or diminution of the causes that maintain this, is one step to the alteration in the texture and composition of this fluid. Some, however, of the laws which regulate the process of growth, we can more distinctly comprehend. Thus—

Although the human organization has some peculiarities which entitle man to an especial class, and place him at the head of animated nature, yet we perceive in the progress of his growth a regular series of development; and when any interruption to the fecal formation takes place, the degree of perfection of the embryo at the time indicates a corresponding step in the scale of animal creation.

By this we learn that bone, cartilage, fibre, membrane, and intestine, can be formed where neither brain, nor heart, nor spine exist.

We learn, too, by this law, to explain the imperfect fecal productions; and to account for the greater frequency in malformations of the head and genital organs, and such as are last in arriving at the period of maturity.

In reverting to the morbid changes of our frame, and in considering the first class of these—such as depend upon altered capillary circulation—I shall notice the state connected with an increased or diminished quantity of fluids, the distention or collapse

of the vessels, the simple softening from increased quantity of fluids in the tissue in the minute vessels, and the induration attendant upon its undue diminution.

In the one instance the alteration of the fluids may be in the vessels themselves, and either increased or diminished; in the other there may be more fluid in the tissues, or less.

In considering the function of capillary circulation essential to life, and approaching the physiological state of that system, I may observe, that for the healthy exercise of the living functions of some, if not all parts of the body, it is necessary that they should be capable of sustaining an increased circulation of blood, and that at other times, on particular occasions, it would appear important that even the usual supply should be reduced.

This we see exemplified in secreting organs during the period of their activity, in muscles during exercise, and in a variety of natural states. Through this power we perceive the *supply of blood* regulated by the wants of the part—the proportion determined to a secreting organ bearing an accurate ratio to the fluids withdrawn from it; and we see in this provision the means of increasing the bulk of parts which may require additional support—muscles constantly exercised acquiring double their size and strength, thus adapting themselves to those circumstances under which they may by habit be placed, and that system suiting itself to the exigencies of its situation. On the first accession of local determination, as is well known, an increased rapidity of circulation ensues; subsequent to this a dilatation of the coats of the vessels succeeds; congestion results. This state or condition may be confined to one part alone. We daily see examples of this determination; and in disease find its illustration, as the sudden turgescence of the vascular system simply, without any appreciable change of structure not unfrequently occurs, and occasions powerful and fatal results when the propulsion is towards important organs: thus we infer this state of the vessels to be the cause of sudden death in children who unexpectedly perish with symptoms of determination of blood to the head—the first stage of the acute hydrocephalus, the condition which precedes effusion; or this state may give rise in adults to apoplexy of the brain or lungs. Congestion may be entirely partial, confined to the situation in which it first occurred, and may remain a longer or shorter period without influencing more remote organs; but, if continued, it excites other actions, which give rise to various sympathetic affections, and may excite disturbed circulation in other organs.

The symptoms induced by this state, when the brain is the point of determination, are

those familiarly known to indicate fulness—giddiness, disturbed function, pain, convulsive movements, complete insensibility. When this state of distention or fulness of vessels is general, an excited state throughout the system is occasioned; fever is induced.

An opposite state of the circulating system—a diminution of the mass of fluids in the minuter vessels, is a condition as well natural as abnormal to the system. Of this an instance may be quoted in the coldness and shrinking of the extremities, from the lessened power of the heart and arteries, which we see on powerful mental emotions—a wise provision, by which the current of the blood may be restrained, under circumstances when probably the condition of the brain would be ill suited to resist its force. This state, the one of absence of blood, as well as that of fulness, may also affect a portion or the whole of the system,—those in whom this general deficiency of blood occurs presenting a well-known external physiognomy—a pale, bloodless countenance, and great debility.

It is not by any means necessary that, to occasion local determination, there should be a redundancy of blood in the system generally; nor does it follow that there should be an increase of power in the part, or in the system thus congested, by which this fulness is maintained: the minuter vessels, acting independently of the heart, they may thus dilate, without any general excitement of the system—active determination of blood to the head taking place in those of spare habit, and in many cannot be prevented by bleeding, however copious or frequently repeated. So far, indeed, from this state of congestion being one constantly of activity, and allied to strength, it is very frequently seen when debility has been induced, which appears, indeed, to be an exciting cause of irritability.

I have hitherto considered parts merely in relation to the altered quantity of fluids they may contain, which may thus be either more or less than that requisite for their several exigences. I shall next consider the result of local congestion, which, although a natural process of the system, is the forerunner, the cause, or the accompaniment of disease; but first may notice an important practical inference which may be drawn from the consideration of the state of the varied quantity of blood and activity in the circulation in one part, while the rest may be either unaffected, or actually receive less, viz.—that the pulsation of any one artery, as the radial, can be no criterion of the circulation through the others; and we perceive how treacherous a guide the pulse may prove, if our attention is directed to the beating of an artery in any one part alone. We have learnt, indeed, that the unduly slow pulse in apoplexy is

quickened by bleeding; we daily find the artery weak in serious inflammation of the lungs; and when the brain or stomach is deeply implicated, we are aware of the diminished power of the arteries in the extremities, and the occasional irregularity of the heart's action.

The symptoms, moreover, which are exhibited in these opposite states, of undue fulness or emptiness of the vascular system, so accurately, under some circumstances, resemble one another, that we may perceive that a very erroneous judgment might be formed, if symptoms alone constituted the basis of a diagnosis.

Thus, while this increased excitement in the arteries, and this enlarged capacity of the vessels, when unduly occasioned, or improperly continued, is of itself productive of injury, other alterations take place, constituting numerous changes in the part, and forming the disorders of the second principle which we observe to exist in all organized structures, viz. errors of "secretion." The process of secretion is that to which, variously modified, all changes of volume in the parts, as well as every alteration in their chemical composition, is to be attributed. This process has been divided into nutritive and functional. The nutritive secretions present us with multiplied examples of alterations in texture, and these may be—

1st, The increase or diminution of the natural structure of the parts; or,

2ndly, The addition of new parts, either foreign to the system at large, or inappropriate to the situation in which it may be deposited.

Of the diseases of the first of these classes, viz. by increase of natural structure, muscular fibre gives us the most frequent example; this, however, can only be considered disease when it occurs in the heart, or some situation where the increase of bulk impedes the functions of the organ.

This increase, however, in natural structure, is not confined to muscles, but has been observed in almost all the textures of the body—as well in the cutaneous and mucous tissues—in the vascular system and cellular structure—the more spongy textures, as in the substance, the solid parenchyma of different organs. The liver in the fetus sometimes, according to Mr. Lobstein, is increased to such an extent as even to render parturition difficult. The thymus gland is occasionally much augmented, particularly, it is affirmed, in those children who die with rachitis. Enormous enlargements of other glands are frequently met with, and numerous cases have now been collected of increase by natural structure of the brain; and examples of such a change in the spine are not wanting in the catalogue of the increase in natural structure.

Of the other state of parts included in



this class, the wasting—their simple diminution—"atrophy"—I shall now speak.

Whenever a part ceases to receive its due excitement, and consequently its proper supply of nourishment, it is observed to diminish in size and volume, and even gradually to disappear.

This state is not unfrequently met with in the limbs, either partially or entirely. When by accident the sight has been injured, we perceive the wasting of the origin of the nerves of the eye; and those accustomed to the examination of the intestinal canal must have met with a state of that viscus of extreme attenuation, of thinning, yet without appreciable alteration in its component parts.

Atrophy in bone is very common, which structure in some individuals becomes so extremely brittle from this cause that they break from the slightest violence. A change in the texture of bone is met with in phthisis, scurvy, and gout, and is, with atrophy of the whole system, the common effect of age.

Mons. Desmoulins, in the *Journ. de Physique*, mentions the sensible diminution of the brain and nervous system, and ascribes to this alteration the climacteric disease so perspicuously described by Sir Henry Hallford.

In the various stages of atrophy, the tissues go through a certain definite process, all returning ultimately to cellular structure, whatever may have been their original form: all fat disappears, the cellular tissue is reduced to a mere network; the muscular structure loses its red colour, becomes white, and is weakened; its strength shrinking, or indeed disappearing totally.

All parts are perceived capable of undergoing a great change in their denseness or rarity, either naturally or by disease. Some change, indeed, is observed in all vascular alteration, and this difference of texture is the regular process at certain periods of life—organs varying from the fluidity of first formation to the rigidity of age; and in the intermediate periods we observe much alteration—from extreme hardness and solidity to relaxation, fragility, or even complete pulpiness.

This diminution of cohesion—a change which may occur in the most solid as well as the more fluid parts—is a certain natural process essential to the performance of some important functions.

A relaxation in the tissues facilitating materially the motion of certain parts, which for a period require such an adaptation—as the fibres of the uterus relax during the period of utero-gestation, and in some animals the ligaments softening, allow motion in the bones of the pelvis previous to parturition—the parts thus for a time conforming to certain laws, return again to their former consistence, when the necessity which induced the change has passed away. Increased

softening appears to be inseparable from the rarefaction of solid parts by the infiltration of fluids. It may exist from many causes, and is attendant as well upon an increased as upon a diminished activity in the parts. Tissues, in this state, yielding readily to slight force, render the heart unable to resist the pressure of the blood, and its rupture is the consequence. The pulpy state of the mucous membrane of the intestinal canal, which is often observed to take place in the stomach, has not yet received a satisfactory explanation: it appears essentially a chemical change, continuing for some days after death, when we cannot suppose that any process of secretion can go on. This softening is not moreover confined to the stomach, but is found equally in the œsophagus and large and small intestines. The brain is especially liable to that change of consistency,—a condition noticed and described by Morgagni, and since more fully by Messrs. Lallemand and Rostan.

A change in the compactness of organs, without alteration in their volume, is occasionally met with: thus we see bone acquire the hardness and solidity of ivory; muscular structure, too, assumes a greater degree of firmness, and its molecules approximate more closely: this state is observed in muscular structure, in the heart and other tissues, in which the natural elasticity and power of contraction are either lost or modified; the walls of the heart, when this viscus has undergone such a change, remaining, after death, firm, rigid, and distended.

I have now to consider those alterations which may take place in parts where the tissues are essentially changed: almost all original structures appear capable of reproduction in their proper situations, the muscular and ganglionic alone excepted; but various enormous deposits are met with throughout the structure, inducing alterations of the texture of the different organs; these deposits may be either natural structure, or new combinations of the component parts of the fluids. Tissues natural to the body, but adventitious to the parts in which they may be deposited, frequently are met with: a misplaced activity, a perverted nutrition, serous and mucous membranes, vascular tissues, fibre and fibro-cartilage and bone, may thus be produced, and all may be resolved into cellular tissue, which may be converted into serous or mucous membranes, and these again become changed into fibre, cartilage, and bone.

The cellular tissue is readily formed by exudation of coagulable lymph, and by the agglutination of two folds of serous membrane we see the ready conversion of that tissue into continuous cellular structure. Synovial membranes may undergo a similar alteration, or be accidentally formed, and condensation of the cells of this tissue form-

ing the parietes of a cyst, and the effusion of fluid into the cavity.

The formation of new vessels, which may themselves accidentally be produced in fresh deposition of coagulable lymph, is a curious process, and takes place with great rapidity. A communication was proved by Sir Everard Home to exist between new and old vessels, when inflammation had not taken place thirty hours.

The vessels, in this instance, communicated with those in the original parts; but the formation of new ones may take place independent of such connexion.

According to Mons. Laennec, the rudiments of new vessels are minute lines, which appear to be coagulated blood; these finally assume a cylindrical form, and present numerous ramifications. Sir Everard Home ascribes the formation of new vessels to certain small vesicles filled with a colourless fluid, which unite and form a vascular tissue.

The carbonic acid gas contained in the blood, and which, under the air-pump, is represented as escaping with an appearance of ebullition, may probably perform a very important office in this change. It occasions to Mr. Brand numerous channels in parts newly effused; and Sir Everard Home has noticed such an effect in the coagulum formed in the blood after its removal from the veins. Mucous membrane appears to be very nearly approximated in the lining of fistulous opening; and cartilage, or fibre, separately or conjointly, are frequently formed. The accidental development of fibre takes place in all reparation of arteries, and they become converted into this substance when they are obliterated. Into fibre are converted the cartilages and synovial membranes, in incomplete ankyloses; it forms new articulations, and is the means of the union of muscles.

Fibrous tissue is particularly disposed to be converted into cartilage; and serous membranes frequently are transformed into this substance;—and both fibre and cartilage are disposed to the deposition of bone.

Phosphate of lime prevails more or less in the economy, and having been deposited in the cartilaginous portions first allotted to it, it then is secreted in other parts of the system, ossifying all the tissues of economy, as seen in advanced life. The deposit of bone is most frequently met with in the inner coats of arteries, which had previously undergone cartilaginous deposit; and osseous concretions have been detected in the interior of the vessels themselves.

Muscular structure is occasionally the seat of this deposit. The thyroid gland, the uterus, and pancreas, are said to have been converted into bone, but in other organs this change is due to the deposition of this matter in the cellular or fibrous tissue. In the lungs, calcareous secretions are frequently

met with, and cysts, in which bone has assumed the form of teeth, have been found in most parts, but most frequently in the ovary.

Much credit is due to M. Andral, for his arrangement of the various abnormal secretions of the vessels, such as are not met with in natural structure. He has divided them into organizable and inorganizable, and has classed them generally according to their chemical composition. Among the inorganizable, some are chiefly composed of albumen, others of saline or gelatinous particles, with fat and certain colouring matters, and come gases. Among those principally composed of albumen he places pus and tubercle.

The deposition of gelatine, although it has not been detected in any of the healthy fluids, is occasionally effected in great abundance in the texture of various parts, and sometimes to a great extent in the cavity of the peritoneum or pleuræ. Irregular secretion of saline matter gives origin to calculi. Fat accumulates into distinct tumors, or replaces muscular fibre, and is deposited in various viscera. The liver is particularly disposed to this deposit. Such a condition of the liver is said to be commonly observed in those persons who die by tubercular phthisis. Colouring matter, lately shewn to be a distinct substance, forms melanotic tumors, recognizable by their dark aspect; then going through certain stages of development, of induration, and softening; and by this secretion a dark colour is given to the membranes of the lungs, or intestines, in the various vessels and glands, when there deposited.

Under this head I shall arrange gaseous substances. According to Mr. Cruikshank and Mr. Abernethy, gases are secreted from the skin. Carbonic acid was found given off from a limb confined in atmospheric air; and Mr. Edwards has proved its extrication from the lungs. Air is moreover observed in the intestines, the cellular tissue, in the peritoneum, brain, chest, and uterus.

It is needless to state the improbability of any other source than the blood for these gases: in the various situations mentioned, its disengagement appears to take place as one of the processes of inflammation, distention of those parts taking place when this fluid, if secreted, would be detained, as in the intestines.

Those tissues which are capable of organization are composed principally of fibrine, and under that head are included a variety of sarcomatous, medullary, fungoid, and scirrhus tumors. The organizable depositions performing the functions of life may take upon them disordered actions, and a softening and ulceration may ensue in the parts then newly formed; and where in such a case ulceration should be set up, little attempt at reparation, in consequence of the



low ratio of vitality in such parts, can be made. Among the organizable substances must be ranked parasitical animals. Of their generation from the tissues themselves various opinions are held. Cases quoted in which children have been born affected with worms while yet in utero, would seem to place such a mode of generation beyond doubt. There does not seem much required to induce the belief that a part of the body might exhibit some of the properties of life, yet remain distinct. The formation of a new vessel, the commencement, the first stage of vascularity, when a distinct cyst is formed, would illustrate the proposition—a process no more extraordinary than the generation of hydatids, which we see to contain one within another a countless progeny.

I have thus enumerated the principal changes to be met with in the tissues, and some of the circumstances connected with them, and have referred them to the alteration of those processes which contribute to the increase and growth of parts. I propose in my next lecture to inquire into the causes which produce and the powers which chiefly direct them, thus predisposing to, and influencing disease.

## ESSAYS ON HYGEIA;

OR THE

*Art of preserving Public and Private Health.*

BY

JOSEPH ROGERSON, Esq. of Wigan; and

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Surgeons.

### ESSAY II.

*Manufactories—Injurious Effects on Vegetable Life.*

THE great progress which chemistry has made of late years, and its extensive and successful application to the arts, has added prodigiously to the number of our national productive establishments; but from the manner in which many of these chemical and other manufactories are at present conducted, clouds upon clouds of improper gases and vapours are continually being poured out, vitiating the atmosphere to an enormous extent. It is on account of those manufactories that men are more and more uniting themselves into large masses; villages are swelling into towns, and towns into thickly-peopled cities; whilst, owing to the superior

attractions of eommerce, joined to the impolicy of our agricultural proprietors, country places are becoming deserted, and it is seldom now that we can discover a "Sweet Auburn"—

"Where health and plenty cheer'd the labour-ing swain."

We are inclined therefore to think that it would be an object of no small importance and utility to point out what it is particularly that is so injurious to public health in places where manufactures are carried on, that so the proper remedies may be applied; and with this view we shall begin by shewing in the first place on animal and vegetable life the effects of air vitiated with

### *Muriatic Acid Gas.*

In the arts this gas escapes more particularly from chemical works, where the preparation of an impure alkali (soda) is carried on. The process pursued is this:—Sulphuric acid is poured on coarse salt, (muriate of soda), when a decomposition ensues; the sulphuric acid, from its greater affinity, unites with the soda, and the muriatic acid is liberated in the form of gas. The sulphate of soda which is now formed from the union of the soda of the salt and the sulphuric acid, is called by the workmen the salt cake, and undergoes another process, for the purpose of separating the acid from the alkali. A quantity of chareoal is mixed with the salt cake, and forms with its sulphuric acid a sulphuret, leaving the soda in its alkaline state. The soda is mixed with some of the chareoal, and in consequence has a black colour, whence it is vulgarly called the black ash, or by some the British barilla. In this state it is used by the soap manufacturers for the preparation of soap, in the place of kelp, which it has entirely or nearly superseded. This black ash is thus prepared in large quantities by professed manufacturers of it, and, as I am told, even by some extensive soap manufacturers, who have this kind of chemical works attached to their soaperies. From this account it is clear that the only part of the process which will be hurtful to the health of the public, or to the salubrity of the places which it reaches, will be the escape of the muriatic acid gas, which is usually conducted up a chimney, and poured in currents into the atmosphere. The quantity of gas thus

streaming from these manufactories is enormous, and is sufficient to vitiate the atmosphere to a great extent.

Muriate of soda, or common dry sea salt, is decomposable into muriatic acid gas (or hydro-chloric acid gas) and soda, in the proportion, according to one authority, of 62 gas + 38 soda = 100 muriate of soda; and according to another, 46 gas + 54 soda = 100 of the salt. Its specific gravity, however, is, according to Sir Humphry Davy, such that 100 cubic inches will weigh 39 grains, though, by calculation, it ought to have been 38·4 grains. The specific gravity, compared with air, will be, in the one case 1·25900, and in the latter 1·2800; but M. G. Lussac states it at 1·2780, and Dr. Thomson at 1·2847. I have made several attempts at ascertaining the specific gravity of this gas, but have not succeeded to my satisfaction. The variability of the results I attribute to the variable, and, I believe, uncertain proportion of water inherent in the different muriatic acid gases. At this time I will select Professor Thomson's value, since it approaches the nearest to some that I obtained.

Then, since 100 cubic inches of gas weigh 39·1839 grains, and in an avoirdupois ton there are 15667200 grains, we shall have the following statement :

| Grains. | Grains.   | Cubic inches.     |
|---------|-----------|-------------------|
| 32·1839 | : 1566720 | :: 100 : 39983760 |

which, being raised into cubic feet, will be 23139. Consequently a ton of salt will give out 39983760 cubic inches, or 23139 cubic feet, of muriatic acid gas.

The physical characters of the muriatic acid gas consist in its being very little heavier than atmospheric air, and in possessing all the mechanical properties of common air, and is capable of indefinite contraction and expansion. It is invisible, but becomes visible in contact with air, in consequence of its moisture, when it forms a light hazy cloud, or a dullish white fog. When the cloud is viewed in a vivid light, or when the sun's rays are full darting upon it, it presents prismatic colours.

Its chemical properties will shew it to be acidified; it readily reddens litmus paper and vegetable blues; it has a strong affinity for water, with which it unites in many and large proportions. At 40° Fahrenheit water absorbs 480 times its bulk of gas; and a cubic inch of water, at 60°, barometer 29·4°, will

take up 515 inches of gas. It drinks up rapidly and largely the water of the air, more so in a warm state of the atmosphere; but temperature increases its bulk, and changes not its chemical properties. It is a non-supporter of combustion, and is very destructive to animal and vegetable life; its odour is pungent and peculiar; its taste acid and corrosive; its action on the organs of animated beings is chiefly exerted on the respiratory apparatus. In a legal suit for a general nuisance, tried at the Kirkdale Sessions' House, Liverpool, it was proved that horses, cattle, and men, in passing an alkali works, were made by inhaling the gas to cough, and to have their breathing much affected. In the case of *Whitehouse v. Stevenson*, for a special nuisance, lately tried at the Staffordshire assizes, it was proved that the muriatic acid gas from a soap manufactory destroyed vegetation, and that passengers were seized with a violent sneezing, coughing, and occasional vomiting. One witness stated, that when he was driving a plough and saw the fog, he was obliged to let the horses loose, when they would gallop away till they got clear of it. A verdict was given in favour of the plaintiff, and 20l. damages were allowed.

We will now proceed to shew the

#### *Effects of Muriatic Acid Gas on Vegetables.*

EXP. I.—A young myrtle, healthy and vigorous, was introduced into a receiver full of pure muriatic acid gas, when the green leaves, which were numerous, were soon altered in colour into a dead livid hue. In about three minutes the tops were drooping and dead, as well as the leaves; in about ten minutes the young stalks or shoots were altered, and in half an hour the receiver was removed, when a piece of litmus paper was immediately reddened on putting it into the glass vessel. The leaves of the tree were withered, and dropt off on the slightest touch, and even the stem was withered and brittle.

EXP. II.—The same receiver, filled with muriatic acid gas, was applied over a crocus, healthy and fresh, having some bright yellow flowers. The flowers in half a minute changed into an orange colour, becoming gradually more and more deep; but some of the leaves of the flowers assumed in three



minutes a livid whiteness, more particularly those in contact with the glass. In about five minutes the tops of the leaves of the plant were of a livid brown colour, and hung down, while the flowers dropt off and were dead. In less than half an hour the whole plant, except the flowers, was withered, and of a livid brown colour, and quite dead. The receiver was now removed, and the contained air directly reddened litmus paper; and on dropping a few drops of liquid ammonia, that hazy gas which appears preparatory to the uniting of the two gases into a solid, was most abundantly formed, shewing that a large quantity of the muriatic acid gas still remained there. The ammonia poured on the leaves and flowers produced the same effects—they also smelling strongly of the gas; and on feeling and examining the flowers, they were found putrid, pulpy, and readily dissolved on rubbing, just as they do after being a long time decayed, while the leaves were tough, somewhat thickened, and dead.

On a piece of bladder carpetted round the plant, to prevent the gas seizing the water of the earth, was found much liquid, which, on examination, proved the fluid juices of the plant strongly saturated with muriatic acid.

Exp. III.—A stream, full and continued, of muriatic acid gas, was directed from the mouth of a retort, flowing from it as it would from the top of a chimney, against a rose tree, young, green, and lively; when, in five minutes, the parts nearest the retort, and consequently receiving first the gas, were altered, particularly the leaves, some of which changed to a red colour, but most of them to a whitish livid yellow, somewhat like leaves in autumn just before the fall of the leaf. In seven minutes the leaves of the whole tree drooped, turned their edges, and were fast fading; the tops of the stems hung down, and shortly afterwards the whole tree was killed. Some of the leaves and parts of the stems were covered with dew, and the remainder felt perfectly dry; but the litmus paper was reddened wherever it was applied. The moist leaves reddened it the quickest and the deepest, the stems the next, and the dry parts the least.

Exp. IV.—The above experiments were repeated on a variety of plants with corresponding results, varying

only a little with regard to the time required to injure or destroy them, whether they were covered with a thin or thick epidermis, growing along the sea coast, in hot-houses, or in the open air.

#### *Observations on those Experiments.*

These experiments were made on plants growing in soil, and the gas was in that state in which it is found when disengaged from common salt by sulphuric acid: it also produced similar effects on branches separated from the tree or plant.

They shew that muriatic acid gas is extremely destructive to vegetation, injuring immediately and killing quickly, or in a very short time, every kind of plant, both by immersion in the pure gas, or by its streams. Some of the leaves and stems were found covered with dews, which were formed by the juices of the plant absorbing the gas, and forming an acid,—these dews or secretions being forced from the plant by the improper stimulus of the gas. On very succulent plants they are produced in the greatest quantity, and the branches pour their fluids so abundantly, that they float for some depth on the top of the mercury, thus affording the chemist an admirable and easy mode of analyzing the fluids of plants for the purposes of vegetable chemistry. For these reasons we should say that this gas would be more injurious in wet and damp weather than in dry, and during night than day, except on rainy ones; because, by combining with the water, for which it has a great affinity, it forms liquid muriatic acid.

From observing the currents or streams of this gas, we should conclude that it will flow to some distance in a state of comparative purity—*i. e.* without mixing much with the atmosphere. This will take place under a clear sky and on a calm day; but, in moist weather, the gas will unite with the water of the air and become a liquid—and from its greater specific gravity, sooner fall to the ground. On windy days it will be mixed or diluted more particularly with the air; but we have found that, in the receiver, it requires considerable agitation thoroughly to mix it with the air, and to keep it so. When so diluted, it will remain mixed with the atmosphere for a considerable length of time, even for days. Places, then, in

the neighbourhood of black ash manufactories, some glass works, and some soap manufactories, where this alkali is prepared, whose air is mixed with muriatic acid gas, will have their atmosphere, in calm weather, polluted for many days even from one discharge of the acid gas, and the inhabitants will, during that time, live in a vitiated air capable of chronically disordering the mucous membranes in any part of their tract that is exposed.

The quantity of muriatic acid gas necessary for the destruction of vegetables, varies some little; but the first blast will injure, if not kill; and, in all instances, not many cubic inches will be found consumed. In the receiver the very succulent plants have appeared to me to raise the mercury higher than any other kind; thus consuming the most gas. They require, too, a more continued current of gas, effectually to destroy; but even from the first blast they seem to pine for a longer time than the others.

*Experiments on Vegetables, with Muriatic Acid Gas, mixed with common Air in various proportions.*

Exp. I.—A healthy growing primrose was immersed in vitiated air, proportioned so that one part of muriatic acid gas was mixed by agitation with five parts of common air. The whole quantity was contained in a jar holding seventy cubic inches. In one minute the leaves were changed, and in two the flowers; but, in less than ten minutes, both leaves and flowers were entirely killed. The receiver was now removed, when the contained air slowly reddened the test; but the leaves and flowers effected it very quickly. Similar effects were produced on other plants by this proportion of gas and air—viz. one in five.

Exp. II.—Vegetables immersed in a quantity of vitiated air, containing one part of muriatic acid gas and twenty of common air, well agitated, were not so soon destroyed as in the last experiment; but this diluted gas was found sufficient to affect the foliage immediately. In a quarter of an hour the tips and edges curled, and began to fade and die; in half an hour the tips, edges, and middle were completely destroyed, but the bottom parts less so, some even retaining a slight degree of greenness. On exposure out of doors, to ascertain

if they would recover, and grow, if again submitted to good air and sunshine, it was found that they uniformly died: so that this proportion of gas will kill vegetation effectually. The branches of trees resist the destructive impression of this gas the most powerfully, and, though the whole foliage be killed, will sometimes, under very favourable circumstances, recover and put out new leaves.

Exp. III.—Into a receiver containing one proportion of muriatic acid gas to one hundred and twenty of common air, vegetables were put: the tips and edges, in twenty minutes afterwards, were fading and dying. The fading and death gradually and slowly extended; and at the end of a few hours (two, three, or three and a half) about two-thirds of the leaves, from the tops, were completely destroyed. At the end of twenty-four hours the receiver was removed, when the parts near the bottom retained some greenness and freshness, but all the rest were withered and dead. The plants and leaves do not recover on exposure to the atmosphere, but the roots shoot up, or some of the branches occasionally put out fresh leaves. The air in the receiver, after the removal of the plants, reddens test paper; and the acquired colour is made more or less sensible on the plant, according to the parts most affected.

This proportion—viz. one in twenty—is therefore sufficient to destroy the leaves of vegetables.

Exp. IV.—The proportion of one part or cubic inch of muriatic acid gas, well mixed and agitated, with 240 of common air, immediately curled and contracted the leaves of a king's-feather, which were green, hardy, and growing; but, after a few minutes' immersion, this effect disappeared, and the leaves again expanded. In an hour they again changed, and now the tips, edges, and parts of the leaves gradually faded and died. At the end of twenty-four hours the receiver was removed, when the above-mentioned parts of the plant alone were killed. Those parts nearest the stalks were healthy-looking, and almost as green as before their immersion.

This proportion of air and gas will injure, but not kill, vegetation. It is vitiated sufficiently to check the growth, nip the tips, and give the whole plant a



stunted and unhealthy appearance. The plants, on exposure to air, never flourish well, but are always stunted and sickly; never perfectly recovering from the effects of the gas.

Exp. V.—The proportion of 500 air, and 1 gas, made the leaves immediately curl slightly, from which they soon recovered. In about two hours and a half the edges of leaves growing on the outside of the plant were blighted; but at the expiration of 24 hours, when the receiver was removed, the edges of these leaves were the only parts injured. The middle of them remained unaffected, as well as all the other parts of the plant. The residuary air was sufficiently acid to redden slightly the test-paper. The pot and plant were removed, and exposed to the open air, where it grew, but not so well as another of the same species which much resembled it, and was placed under the same circumstances, with the exception of its freedom from immersion in acidified air. The edges of the outer leaves continued blighted; but the leaves themselves did not die, though they never recovered the green vigour of health, and never flourished.

Air, impregnated in this proportion (1 gas + 500 atmosphere) does not then kill, but it impedes growth, and destroys healthy vigour.

Exp. VI.—The proportion of one of muriatic gas in 1000 of atmosphere, affects the plant directly, curling its leaves, which soon expand. The mischief produced is very slight, contracting the tips a little. One of the buds of the flowers even during its immersion put forth and opened. The air, however, is sufficiently vitiated to make an injurious impression on vegetation, and to make its effects on plants perceptible.

Exp. VII.—The proportion of one muriatic acid gas, and 1500 air, ceases to be injurious, or at least does not produce a perceptible effect, the plants growing without appearing to feel the presence of the muriatic acid gas diluted amidst such a mass of air.

*Observations and Deductions from the foregoing Experiments.*

These experiments shew that muriatic acid gas is strikingly and perceptibly injurious to vegetables, till it is so di-

luted that it only contains one part of muriatic gas in one thousand five hundred of atmospheric air; and that it is injurious and destructive to vegetable life and growth, exactly in proportion to the gas contained in the aerial mixture, *i. e.* the more gas there is in a given space, the more injurious is that polluted air to vegetation. This is only in accordance with vegetable physiology, for vegetables breathe only the constituents of the air; so that the more the air deviates from these constituents, the more injurious it must prove. Now it has been before shewn that one ton of decomposed salt gives out 23,139 cubic feet of muriatic acid gas, or 39,983,760 cubic inches of it; and by experiment it has been ascertained, that one cubic inch will render impure, or vitiate, upwards of 1000 cubic inches of atmospheric air, so as to make it unfit for the health, growth, and existence of vegetables. Therefore the muriatic acid gas from a ton of salt will injuriously impregnate 3998,3760,000 cubic inches of atmosphere. This is the very lowest estimate; and if the proportion of muriatic acid gas be greater, it will be in proportion more unfavourable to vegetation and the health and growth of plants. If the gas exists in the atmosphere in a state more diluted than 1 in 1500, we must still regard it as an improper air for vegetation, for it will not in their healthy state be in any ways useful to plants. It is improper for two reasons: first, while it remains so diluted, it is an improper hygienic stimulus; and, secondly, since its specific gravity, and its non-chemical union will cause it to separate from the common air, and fall towards the ground, it becomes in time less and less diluted, and perhaps ultimately almost pure gas, or liquid muriatic acid.

The tips and edges of the leaves of trees and plants, and the ends of the branches and young shoots, fall the earliest victims of this acidified gas and air; but the work of destruction gradually extends from thence over the other parts. Even when this gas is so diluted that it is not sufficiently powerful to destroy more than the tips and edges, it still impairs the growth and well-being of the plant.

# SULPHATE OF STRYCHNINE IN PARALYSIS.

*To the Editor of the London Medical Gazette.*

SIR,

THE following successful case of the use of the sulphate of strychnine in paralysis, I shall be obliged by your inserting in your Gazette.—I have the honour to be, sir,

Your obedient servant,

JOHN S. GASKOIN.

22, Clarges-Street, May 24, 1832.

Master C. S., æt. 12 years, of Flemspton, near Bury St. Edmunds, from his birth until about four years since was a strong athletic boy, fond of and indulging in vigorous exercises, and possessing a mental capacity equal to the expectation of his teacher. At about that time he seemed all at once to lose his inclination for his usual recreations, leaving his pony and companions, and to prefer quietude and fondling about his mother, seeking constantly to support his head on her lap, complaining of much headache, loss of appetite, &c. His medical attendant considered him suffering from hepatic disease, with fever, which soon confined him to his bed. He was, as he expressed it, unable to sustain "the weight of his head." He at no time exhibited any symptom of delirium. The febrile state passed; his incapability to rise was for some time attributed to consequent debility; but attention was soon drawn to the paralytic affection, which precluded all voluntary action of the entire spine. For some time after this there continued great intolerance of noise, and impatience if read to, for more than a few minutes at a time. The society of his playmates was irksome to him, and he was generally impatient, with obvious loss of memory. Raising the head in the least degree, even to be placed on a pillow, caused faintness and sickness, and a violent pain, which he described as resembling his idea of a "knife striking down the back bone;" and pressure between the atlas and dentatus produced also sensations of faintness and sickness. This is not the case now. He has, however, remained in the horizontal position, on bed or sofa, until about four months ago, when, by gradually elevating the body on an inclined

plane, he became able ultimately to sit nearly upright, the head and back being always necessarily supported by a high-backed chair. The change to this position caused great irregularity of circulation, blueness of the lips and whole countenance, during a little while; he fell asleep almost immediately on being raised, and was slightly convulsed during its continuance, which was generally about an hour; afterwards he experienced no inconvenience during the day. All these effects passed away at the end of about a week, and he has ever since been able to sit up with the same comfort as when recumbent, but still without the least capability to move the head, or any part of the vertebral column, from its support; and on pulling him forward, so as to detach him from that support, the head, and body too, if sufficiently removed, follow the laws of common gravitation, and fall as though loosely attached. Of course he cannot stand, but he can freely use both legs and arms, and rotate the head from side to side; and it is curious to observe the power he has acquired to propel himself on the back by the action of his extremities only; to dress and undress himself, &c. The appetite, although it has been generally good, has, during the whole illness, been monotonous and most capricious—living on a single article of food for months together, partaking of it at *all* the regular periods of his meals. The common Barcelona nuts and filberts maintained him for three months; carrots supplied him for about two months; cabbages, raisins, &c. &c. for similar periods. During the last eighteen months he has adhered solely to potatoes, salt with them a great proportion of salt and some butter, and has gained much flesh; having been before considerably emaciated from repeated bowel complaints, &c. He has passed three months at a time without taking any kind of fluid, and even now the quantity of a tumblerful will sometimes suffice him for two or three days. The efforts of the mother, in tempting him with those delicacies and varieties most sought by children, were unceasing and unavailing, during the whole time of this dietetic peculiarity; the smell of any food, even of bread, which, from the commencement of the attack, he had not tasted, or tea, or other than the selected one for the time being, induced palor, faintness, nausea,



and occasionally vomiting. Such is the history of the case received from the mother, on the arrival of the boy in London, on the 29th October, 1831\*.

On carefully examining the vertebræ, the bones were found to be sound, and perfectly in position, one with the other; and the muscles immediately connected with them not diminished in volume. The countenance was healthy, the visceral functions rightly performed, the pulse good, his appetite sufficient, and his spirits excellent; and he was full of confidence that at least some instruments might be devised here to enable him to walk, which was the extreme hope in his visit to the metropolis, and was undertaken by his mother rather as a duty than with any expectation of advantage to her child.

This being a case of that form of paralysis which follows fevers occasionally in children, and having resisted, as such cases unfortunately generally do, the careful and patient administration of the most approved remedies—as local bloodlettings, perpetual blisters, and caustic issues; mercurial frictions both in the spine and extremities, and mercury internally also during several months, &c. &c. &c. and all without the slightest medicinal or constitutional effect—I proposed, before beginning any new and active plan of treatment, that we should have the valuable assistance of my friend, Mr. Brodie. The prognosis, of course, was not favourable, and the inapplicability of instruments was confirmed by one of our mechanists in that department. Hope fell, therefore, almost to despondency.

Mr. Brodie concurred in the propriety of the use of the *sulphate of strychnine*, and the patient began, on the 1st November, with one-thirtieth of a grain three times a day, and the dose was gradually increased one-thirtieth at a time, until, on the 16th November, he took six-thirtieths three times a day. On the 19th he experienced slight dizziness, with great palor, and loss of consciousness for about half a minute; but no twitchings of the muscles. The dose was, in consequence, reduced to four-thirtieths of a grain, and it was again gradually increased to one-fifth on

the 24th; and no recurrence of any unpleasant symptom taking place, it was continued, without intermission, three times a day until the 12th December. One-fifth of a grain being, from the above-named circumstance, considered probably the maximum dose the patient could bear, no increase was attempted, lest it might occasion disagreement and the necessity of its ultimate discontinuance. *Sulphate of strychnine*, from Pelletier's, of Paris, and frictions with a coarse flannel along the whole spine, for twenty minutes, were the only means employed in London.

On the 27th November he expressed some dislike to his long-accustomed food of potatoes, &c. in exactly a similar manner as he had before done prior to the change of his other kinds of diet. He wished now, however, for meat; and from this time he partook of all the diversified diet of the family—of all his former antipathies—meats, bread, wines, tea, &c. &c.

On the 4th December he felt a sensation of power in his neck, and was, in the course of the day, able to elevate it from its support and move it backwards and forwards. It will be remembered, he could before partially rotate the head when supported. No further improvement was noticed until the 11th December. At 4 o'clock on that day the very frequently repeated trial was made, but on pulling him forward the back as usual dropped. About 7 o'clock he said to his mother, "I don't know, but I *feel* as though I could stand." He made the attempt with assistance, and tremulously did so for a few seconds, and in the course of the evening, by merely placing his hands on the table, &c. He was carried, as usual, to bed by his servant; and we may better and more easily imagine than describe the feelings of his mother, on perceiving him reflected in her glass, while at her dressing-table, advancing on limbs which had not borne him for so many years, upright, firmly, and alone, into her room the following morning. The joy on effecting this surprise (for he had risen before the arrival of his servant, and had dressed himself therefore without assistance), and the excitement of the boy on regaining the use of his legs, was so great that he could not be controlled from using them the whole day; he suffered, how-

\* The above history having been sent to Mr. Gadge, of Mildenhall, his medical attendant, for correction, he returned for answer, "Your history of the case appears so perfectly correct, that I could not suggest any addition or alteration."

ever, no other inconvenience than that of fatigue.

During the employment of this active and powerful remedy, the patient experienced no sort of disturbance other than that described to have occurred on the 19th November; and every hope being fulfilled, the dose was decreased to a tenth of a grain three times a day on the 13th December, and discontinued entirely on the 16th.

It would be difficult to define the exact nerves affected in this disease, but the practical deduction will be less intricate. A powerful medicine, known singularly to affect the actions of the muscles, is employed and watchfully pushed to a decided influence on the nervous system; and its continuance at that dose produces three consecutive effects. In twenty-six days the restoration of the natural functions of the nerves of taste, the stomach, &c., in thirty-four days the return of voluntary power in the muscles connected with the cervical vertebræ, and ultimately, in forty-two days, over those of the whole vertebral column. As far as I have remarked, in this and other cases, of the good effects of the sulphate of strychnine, its most useful mode of administration is that of exceedingly gradual increase, and its continuance at that dose which produces *any* constitutional action. It must be observed that each improvement in this case was sudden, and, I am happy to add, continues permanent; for a letter from his mother, dated 18th January last, says, "My boy continues quite well, but his ankles swell a little; he rides his pony, which I think less fatiguing than walking, for I cannot, without great difficulty, keep him within doors." And a friend from the neighbourhood informed me, on the 29th of March, that his ankles no longer swelled, and that, a few days before, he had been "out with the fox hounds," and had followed them a sharp run of about eleven miles, with a field of sportsmen, many of whom had been for years in the habit of pulling up and chatting with him as he lay on his back fronting his house, to enjoy the passing of the hunters to their sport.

A letter, 13th instant, says he continues in excellent health.

## ON A PECULIAR CAUSE OF LACERATION OF THE PERINÆUM.

*To the Editor of the London Medical Gazette.*

SIR,

AMONG the causes which, towards the close of parturition, impede the entrance of the child's head into the world, I do not find mentioned by authors one which recently fell under my notice. The case was that of a young woman, of healthy conformation, in labour for the first time. In about ten hours from the commencement of uterine contraction, the head touched the perinæum; it emerged from underneath the arch of the pubes by the slowest degrees, keeping the perinæum permanently distended. When about half the head was born, though the pains continued with unmitigated severity, it ceased to make further progress, and became immovable. On examining carefully, I found that the margin of the perinæum below, and of the vaginal orifice on each side, was firmly and forcibly applied round the head, precisely in the line of the coronal suture, so that the integuments in that situation were constricted, as well as depressed. The advanced scalp soon became tumid, so as to disguise the elongated form of the bones beneath. At this time, from the thinness of the perinæum, the intense local suffering, the vigorousness of uterine contraction, and the signs of disturbed action in the brain, I could not avoid being apprehensive of laceration of the perinæum, on one hand, or of a rupture of the uterus, or a sudden cerebral lesion, on the other. No mischief, however, of any kind was produced; the continuing compressive force diminished the bulk of the confined portion of the head; and at the end of about ten minutes, during which I simply sustained the perinæum, and endeavoured to moderate the patient's furious irritability, it was expelled. The child was uninjured, but the whole head, after the recovery of its natural shape, was unusually large.

Reflection on the circumstances of this case has suggested to me a probable occasion of those lacerations of the perinæum, which, from happening notwithstanding the utmost care to the contrary, are considered, and may be termed, unavoidable. The shape of the



child's head during its birth is, it will be remembered, conoidal, the base being represented by the bones of the face, and the apex by the point of union of the occipital with the parietal bones behind. The mode in which the head passes the outlet of the pelvis and vulva is as follows. That part of the occiput between the protuberance and great foramen is applied against the lower edge of Camper's triangular ligament; on this it turns as on a pivot, thus causing the chin to recede from the sternum; and the vertex, sagittal suture, anterior fontanelle, forehead, nose, and chin, to be successively disengaged. The distance of these parts from the centre of motion in the occiput of course differs—the greatest, however, is that terminating in the anterior fontanelle; but this is, at the same time, the shortest of the antero-posterior diameters of the entire head.

In the next place, it must be recollected that all the cranial bones are not equally susceptible of approximation, or similarly capable of overlapping each other. The frontal bones, by reason of their connexion with the face, are less free and moveable than those of the occiput and sides of the head; a consequence of which is, that the bulk of the fore part of the head cannot be reduced or diminished in a corresponding degree with the back part.

As often, therefore, as the passage of the head through the external parts is rendered difficult, the principal resistance will be towards its anterior part, and particularly about, and on each side, of the anterior fontanelle, in the course of the coronal suture. The difficulty adverted to may be constituted by any one, or by a combination, of these conditions, namely, unusually large size or firm ossification of the child's head; great rigidity and imperfect elasticity of the perinæum; a similar state with extraordinary narrowness, of the vaginal orifice. If, with a hindrance so derived, a width of coronal suture greater than natural should chance to concur, we are furnished with the requisite conditions for the production of the kind of case such as is related above.

In that instance, interruption merely was given to the natural progress of the labour. It is evident, however, that various evil results might occur from such an accident, and that a very probable one will necessarily be—from the

forcible pressure of the edges of the then projecting frontal bones against its margin—more or less laceration of the substance of the perinæum. Much additional suffering must always be created, and this I can conceive to be so acute as to give rise, in certain habits, to a derangement of the cerebral system, great enough to determine convulsions. The obstruction might likewise be so powerful and obstinate that the action of the uterus, instead of overcoming it, would rather go on to the production of a breach of continuity; or might be so wearied by fruitless efforts as at length to terminate in incapability of further exertion, while the exhaustion of the general system would be commensurate. To the child the consequence might be, by compression of the brain, apoplexy, and death.

If it be asked, why then have not convulsions, ruptured uterus, exhaustion, or an apoplectic condition of the child, been noticed to occur more frequently under such circumstances, I answer, they have been prevented by the yielding and laceration of the perinæum, which has happened to a sufficient extent to entirely release the head from constriction, and to allow the projecting edges of the frontal bones, followed by the remaining head and face, freely to escape. Regarded in this light, laceration of the perinæum, as a sequence of contraction of the margin of the external aperture on the interosseous space formed by the anterior fontanelle and coronal suture, may be considered not only unavoidable, but even salutary. Or, to speak more strictly, there is presented to nature a choice of evils, from amongst which, ever consistent and beneficent, she selects the least.

An inference, however, must not be drawn from this view of the case in favour of neglecting to take precautions against the occurrence of laceration of the perinæum, still less of promoting or encouraging such a termination. The inadequacy of the natural agents of parturition to rectify the deviation and bring the delivery to a happy conclusion, ought not to be hastily assumed; never, indeed, till laceration is on the point of commencing, and then it should be the practitioner's chief object to restrain and limit the extent of the injury. But care should be likewise taken that the accident is not unnecessarily provoked by indiscriminate and too stre-

nuous attempts to avoid it. These consist in urgently compressing the anterior portion and edge of the perinæum against the prominent bone, and in offering, through its surface generally, active resistance, instead of affording passive support; and they unquestionably would only contribute to the speedier and complete thinning, and thereby the readier laceration, of the part.

With respect to other remedial means, in extreme cases of arrest of this sort, craniotomy might become justifiable or indispensable; but under ordinary circumstances, all that can be done judiciously is merely to increase the cohesive power of the perinæum by the exact apposition of the hand, and to abstain from inviting, by injudicious pressure, the imprisoned bones to force for themselves a passage through the skin.—I remain, sir,

Your most obedient servant,

SAMUEL MALINS, M.D.

Lecturer on Midwifery.

Liverpool, May 24th, 1832.

## SALINE INJECTIONS IN CHOLERA.

*To the Editor of the London Medical Gazette.*

SIR,

A CASE of cholera has just been treated in this establishment upon the plan lately recommended by Drs. Latta, Lewins, &c. in Edinburgh. I have drawn up the particulars, and, as they may be interesting to some of your readers, I beg to offer them to you for insertion in the next number of the Gazette.

I am, sir,

Your obedient servant,

ALEXANDER TWEEDIE.

3, Abchurch-Lane, June 4, 1832.

*CASE I. in which nearly a gallon was injected, with temporary improvement, but ultimate failure.—Appearances on Dissection, and Remarks by Mr. Tweedie.*

Charles Lamb, æt. thirty-six, admitted into Abchurch-Lane Hospital, at 11 A.M. Sunday, June 3, 1832, from the "Dispatch," Whitby sloop, now lying off Wool Quay, Custom-house.

This man is a publican and gunsmith at Whitby, which place he left on last Tuesday week, as a passenger on board the above vessel. He arrived in London eight days ago, and immediately went on shore, where (in the neighbourhood of Wapping) it ap-

pears he has been living in a most intemperate way, till, having spent all his money, he found a bed for the last two nights on board the vessel in which he came to London as a passenger. Last night he went to bed sober, about ten o'clock, having eaten a little bread and bacon for supper, and being in good spirits and in his accustomed health\*. About midnight he got up to go to the privy, and a looseness that now commenced kept him awake till five o'clock, when he began to vomit. At 7, cramps ensued. At 9, he was seen by Mr. W. Smith of Gracechurch-Street, who found him pulseless, and, in his opinion, past recovery. At 11 he arrived here, having had, shortly before admission, a cordial and opiate draught. His state, on admission, is as follows:—

General aspect of features very much collapsed and congested—of a dull, leaden, livid hue. The eyes deeply retracted, nose shrunk, lips livid and cold. Eyes half open, and turned up; pupils natural; tongue covered with a yellow moist fur—temperature beneath it 79°. Hands lividly blue; pulse not countable; skin damp and inelastic; feet cold, and partly livid. Voice very low; breathing 36. There has been a cessation of vomiting and purging since nine o'clock; from report they were very plentiful, and like water. He has not urined since five or six o'clock; complains of pain in the back. He is now suffering from cramps in the hands, legs, thighs, and abdomen, and is urgently craving for cold water. He states, that early in the morning he felt a sensation of singing in the ears, and was very deaf. He has worn a flannel belt (without reference to cholera) many years.

11 A.M.—Ordered warm bed; hot bottles to feet; Calomel, gr. v. ex aquâ; Sinapism. amplum thoraci et abdomini.

12th.—Has been much cramped, restless, and very thirsty. He retains small sips of water. Sinapism has had no effect; removed. It was now determined, in consultation with Dr. B. Babington, that, as the case appeared to promise an almost immediately fatal result, the plan of injecting into the circulation, as recommended and adopted in Edinburgh, by Drs. Latta, Lewins, &c. should be practised.

Quarter past 1 P.M.—The necessary apparatus being provided, we proceeded to the operation shortly after one o'clock, at which time the pulse at the wrist was scarcely perceptible; at the heart it beat 148 in the minute. Temperature under tongue 84°. Respiration 36, and he had just been cramped, and was very restless. The median cephalic vein of the right arm was opened for

\* He subsequently acknowledged that he had had irritable bowels nearly all the time he had been on shore.



the insertion of the tube of the syringe, and the following was the fluid for injection, as advised by Dr. Lewins, &c.—viz.

Muriate of Soda, 3ij.; Carbon. of Soda, 3ij.; water, 60 ounces; temperature from 110° to 115°.

2 P.M.—After a very gradual injection of 22 ounces, respiration 30; pulse at wrist 120. Has just had cramp in the right hand.

Quarter past 2 P.M.—The patient appearing much collapsed after 34 ounces had been injected, the following draught was given:—

Brandy, 3j.; Ammon. S. Carb. gr. v.; Aquæ calidæ, 3ij. M.

This was instantly rejected; and after a brief pause, arising from the apprehension that he was about to die under our hands, the injection was again proceeded with very gradually.

3 P.M.—Fifty-five ounces have now been injected. His pulse is obviously stronger (120); voice firmer; countenance more lively. He expresses himself as feeling better, and is quite free from cramp. Has just past a stool of alkaline property, fluid, with floating flakes, and of a pale yellow hue—in quantity about 3vj.

Sir William Russell, who had been invited, now arrived, and not only approved of the measures that had been adopted, but was of opinion that the injection should be repeated if the patient should lose any of the ground that had been gained. Sir William looked upon it otherwise as a hopeless case.

Half-past 3 P.M.—Another stool, like the last, but less in quantity, and rather feculent in smell. Hands are warmer; pulse 120, weaker than half an hour ago. Respiration 36. Says he is better. Has taken, to quench his thirst, the following draught occasionally, and is not restless.

Acid. Tartar. gr. xx. Sodæ Carb. gr. xxv. Aquæ, 3ij. actu efferv. sumend.

Ten minutes to 4 P.M.—Pulse irregular, and very weak—so indistinct as not to be counted at the wrist; between 120 and 130 at the heart. Breathing 42; surface warm, but not moist; hands less warm than when last felt; voice husky; complains of thirst; countenance again more collapsed.

#### Rep. Injectio.

Quarter to 5 P.M.—Fifty-four ounces have been injected. Pulse 120, stronger than at any previous period. Voice firmer; intellect very complete; he notices all things around him with much shrewdness, and looks greatly enlivened. Whilst the injection was proceeding he had a dejection, about a pint, coloured like dark urine; but he says he is sure there is no urine in it. It smells feculent. He has drank water and thin arrow-root from time to time, all of

which he retains. There is a gentle dew on the forehead; breathing 42, very hurried. Whereas before the injection he was very restless, he has now turned quietly on his side, and is composing himself to sleep.

Rx Ext. Hæmatoxyli, gr. x. T. Catechu, 3ss. Aquæ Menth. Pip. 3iss. M. ft. haust. st. s. et post sedes singulas.

5½.—Pulse keeps up; perspiration over the body.

6 P.M.—Has been in a profuse clammy sweat since half-past five o'clock, and now complains of intolerable heat, tossing off the bed-clothes; pulse is very irregular, scarcely to be felt, ranging from 120 to 130; breathing 48, much oppressed; there is an unsettled manner about him, which, however, does not amount to delirium; has just passed a stool similar to the last noticed, and about half-a-pint in bulk.

6½ P.M.—He is pulseless, and gasping for breath slowly, as if now dying. Though alone, with only nurse's aid, I am about to inject again.

¾ to 7 P.M.—Dead; 3xij. of fluid thrown in; but he did not rally, and died under the operation.

The body was opened 13 hours after death, in presence of Dr. B. Babington, Messrs. W. Smith, Charles Gaselee, and A. Tweedie.

*External.*—Much lividity posteriorly, as well as anteriorly, on the legs, thighs, scrotum, and parts adjacent; ears quite blue; limbs rigid; configuration very muscular.

*Chest.*—Pleuræ plastic and dry; right lung healthy; left lung adherent by old bands; neither inordinately congested; heart rather flaccid; pericardium contained 3ij of liquor; coronary veins not unusually injected; right ventricle and auricle loosely full of dark, currant-jelly like blood, not fairly separated, and quite as dark as in other cases of cholera; vena cava ditto, and not remarkably distended; left ventricle the same, in less quantity; left auricle empty; aorta contained a small quantity of the like.

*Abdomen.*—Cavity dry and plastic; omentum natural, if any thing a little redder than healthy; surface of small intestines not nearly so pink as in most cases of cholera, indeed very little redder than in ordinary disease; liver pale, large, rather fatty, and containing little blood; gall-bladder nearly empty; stomach natural without, pale within, and containing about 3viij. of the fluids lately taken; there was roughness, in a very dubious degree, of the inner coat; small intestines, from duodenum downwards, containing a large quantity of watery fluid, like very thin gruel, or barley-water, of alkaline re-action; mucous membrane quite pale and watery; no pasty matter adherent anywhere; at the lower part of ileum a few, and very few, single glands enlarged; large intestines natural without, ensanguine with-

in, containing similar watery fluid to that found in the small bowel; no enlarged glands; kidneys, &c. &c. sound; urinary bladder literally empty, and firmly contracted.

*Head.*—Brain and membranes natural; there was about  $\frac{3}{4}$  of fluid in the ventricles, and at the base together. No other morbid existence was discovered.

**REMARKS.**—There were many singularities in the life and death of this patient. Before the first injection of fluid he was in a most restless condition, with a cold sweat over his body; and in such an extreme state of collapse and depression that there seemed no prospect of other than an almost instant death. The injection rallied him; but even whilst this was in progress, at one period ( $2\frac{1}{4}$  P.M.) he appeared so nearly *in articulo mortis* that we were about to desist; nevertheless, we persisted, and he roused; the cold sweat completely ceasing. At the second injection, too, we thought that he was breathing his last; however, towards its termination, he became marvellously restored; his pulse and warmth rose; and his feelings were so happy that he was enabled, to our great delight, to make shrewd remarks on the objects and events about him, and even to be jocose and facetious respecting them. This state, as well as the degree of restoration that had now been attained, will best be illustrated by the relation of a few anecdotes. Thus, towards the close of this last injection, I happened to notice, "Well, we have almost injected fifty-six ounces." Ah! replied he, "I shall contradict that: there are only fifty-five and a half; don't you see you have spilled some." It was observed that the veins on the back of his hand seemed more full. "Yes," he said, "something must be full after all this." Some brandy was put into a little arrow-root for drink. "What is here," he asked, "besides arrow-root." "Nothing but a little sugar," said nurse. "I am sure there is something else." "Only a little brandy to flavour it." "Do you call that nothing," said he, as he finished the grateful draught with much apparent satisfaction, exclaiming, in a tone of hearty sincerity, as he returned the cup into nurse's hand, "thank God for that."

In this tone did he converse, familiarly and jocularly, so that it was impossible for us to withhold our sympathy and congratulation; but this bright

prospect was only of brief duration, for within half an hour he began to flag; perspiration came on, at first warm, then cold; and rapidly fatal was the advance of his illness from this period.

This was one of those cases in which from the first it seemed that "death had marked him for his own."

It is strange that though one hundred and twenty-one ounces (nearly a gallon) of fluid passed into the vein, the blood in the *right auricle* of the heart, and indeed every where else, should nevertheless have been so thick and dark as it was: this is the more remarkable when it is remembered that twelve of these ounces were thrown in during the last eight or ten minutes of life—in fact, whilst the patient was dying. The serous cavities were quite dry, but the quantity of watery fluid in the bowels was very plentiful; so that it would seem as if the watery parts had found their way into the intestines from the circulation in an infinitely more expeditious and complete manner than the existing state of physiology had prepared us to anticipate.

As immediately arising from, and connected with this case, I would most respectfully throw out the following queries:—

1st. What would be the effect of such an injection into the veins of an individual in sound health?

2d. Whether there are not other diseases besides cholera in which this mode of treatment may be used with advantage?

3d. What is the explanation of the circumstance noticed in the postmortem inspection of the foregoing case, that no visible trace of the injected fluid was to be found in the general mass of the blood, although  $\frac{3}{4}$  xij. were injected as the man was dying?

4th. Is it advisable to inject muriate of soda in this way? Common salt is a purgative, and is in daily use for that purpose in enemata. Will it not be purgative also when injected into the veins? The quantity contained in one hundred and twenty ounces of fluid injected is  $\frac{3}{4}$  ss. quite enough to induce purgation under common circumstances.

**CASE II.**—In which Injection into the Veins was practised without success at the Free Hospital in Greville-Street.

On the 31st of May, about one o'clock P.M. one of the nurses was attacked with cholera. She had the usual symptoms,



but with the cramps more than commonly severe, and was passing fast into a state of collapse. The saline treatment was used by Mr. Whitmore, as in the cases formerly detailed in this Journal, under which she gradually rallied, and at noon, on the 4th inst. she was considered by her attendants as nearly out of danger. About 7 in the evening of that day, however, she was seized with violent cramps in the stomach, when the saline remedies were suspended, and some opening medicine, with a small quantity of calomel and opium, was administered. She continued to get worse, and in consequence of a mistake on the part of her nurse, the saline powders were wholly omitted. She continued very ill all day on the 5th, the stomach being so irritable that no medicines could be retained for a moment. On the 6th she was so ill that not the slightest hope was entertained of her recovery, and Dr. Stevens proposed saline injections into the veins as a *dernier ressort*. There were six medical men present, all of whom concurred in the propriety of the experiment being made. The operation was performed by Dr. Stevens and Mr. Marsden, one of the regular attendants at the hospital. About three pints, of the same strength as used in Scotland, were thrown in, soon after which the pulse rose, becoming fuller, and the blood more florid. The apparent benefit; however, was but temporary, and at seven she expired.

It may be proper to state that the relapse, with cramp in the stomach, which led to the suspension of the saline treatment, was brought on by her having eaten a lobster, (a whole one!) which had been brought into her clandestinely by a companion, a few hours before.

There is reason to believe that this case was complicated with an affection of the brain, and altogether it seems to have been one in which little was to be expected from the injection; at any rate it did no harm, and perhaps prolonged life a few hours.

As an offset to the above case, it may be stated that Mr. Whitmore has had in all about thirty cases of cholera since he commenced the saline treatment, and of this number he has lost only two; one of these cases was that of a man in the above hospital, who was brought in in the very last stage, and died soon after admission; the other is the case of the nurse detailed above. In addition to

these, there have been lately in the same hospital seven cases, six of which were very severe. They have all been under the saline treatment; four of them have been dismissed cured, and the other three are now considered as out of danger.

CASE III.—*In which Saline Injection into the Veins was adopted with success\*.*

MARTHA SMITH, aged 38, a noted drunkard, thin and debilitated, in 6th month of pregnancy, admitted into the hospital at 8 P.M. 16th May, 1832.

It appears she has had vomiting and purging since Sunday morning, 12th instant. Cramps came on about four hours ago in both legs; great evacuations, both upwards and downwards, like dirty water. The countenance is now collapsed, eyes sunk, tongue cold, pulse imperceptible at wrist, very small in brachial artery, 124.

R Muriat. Sodæ, ʒij. Carbon. Sodæ, ʒj. Aq. Calid. ℥vj. solve ft. Euema statim injiciend. Sinapisms to spine and epigastrium. Let her be placed on heated tin mattress.

Nine.—Has a good deal of vomiting; is getting warmer; pulse now perceptible in right wrist; tongue warmer; she allows the enema to come away without giving notice to nurse.

Saline Enema as above, with the addition of white of eggs, to be repeated every half hour.

Ten.—Vomiting and purging of watery fluid; with slimy matter in it.

Half-past ten.—Cramps have returned severe in left leg; pulse again quite imperceptible; urgent thirst, and constant vomiting.

Rept. Enema et Pulveres Effervescentes.

Half past eleven.—Breathing becoming much affected; extreme restlessness; cramps severe in legs, and every symptom of sinking.

Let the following saline solution be injected into one of the veins of the arm.

R Muriat. Sodæ, ʒj. Carbon. Sodæ, gr. x. Aq. calid. ℥iij. solve temp. 105° F.

Noon.—When about ℥j. had been thrown in, the pulse was perceived to flutter at the wrist, and gradually strengthened as the injection was proceeded with. By the time ℥iiiss. had been injected, the countenance, which was before quite death-like, now beamed with the appearance of health, and she began to converse freely. Pulse 96, moderate.

To have ʒj. of gin in warm water, with sugar.

Half-past one.—The gin was immediately

\* For this and the following case, to which we referred last week, we are indebted to the Central Board of Health.—ED. GAZ.

rejected; pulse has again gradually become imperceptible, and respiration quick and laborious.

Two.—Let the venous injection be repeated to 15vj.

The effect of the injection as formerly was very striking. To see an individual who seemed *in articulo mortis* brought back, as it were, in so short a space of time to an apparently tolerable state of health, could not but astonish the beholder. Before the injection was finished, the pulse had returned to a healthy fulness and firmness. Expresses herself much relieved; no purging, but vomits a good deal of serous matter.

R Muriat. Sodæ, ʒij. Carbon. Sodæ, ʒj.  
Alcohol Dilut. ʒj. Aq. Calid. 15ijj.  
M. ft. Enema statim injiciend.

Four P.M.—Enema retained about an hour and a half; surface of body now comfortably warm. She has not passed more fluid by stool than was thrown into the rectum.

Six P.M.—Has slept softly for an hour, the first sleep she has had for many days.

R Subm. Hydrarg. gr. v. Pulv. Opii, gr. ss. M. sumat stat. et rept. 3tia quæque horâ.

Nine P.M.—Complains much of vomiting and sense of weakness; countenance rather collapsed; breathing difficult.

Let ʒlxxx. be injected into the veins again gradually.

After the first few ounces were thrown in, she complained of an acute pain at the epigastrium and faintness, probably arising from the fluid being thrown in too fast upon the heart, or from the passing of a bubble or two of air, which may have got in from the inaccuracy of the injecting apparatus used: be that as it may, the circulating system was so much affected, that the pulse, from being distinct though feeble, became quite imperceptible; but on stopping the injection for some minutes, the pulse gradually returned, and the pain abated. She expressed herself as always getting relief from the operation.

Eleven P.M.—Vomiting continues urgent.

App. Emp. Cantharid. Epigast. Effervescing draughts occasionally.

17th.—Has passed about 15j. of urine, of natural appearance; this is the first she has made since she was brought in.

From this time she went on gradually to improve, but stomach continued very irritable, and the matter vomited was bilious.

On 21st labour pains came on, and she was delivered of a still-born female child.

22d.—Symptoms of phlebitis in right arm came on, proceeding from the wound upwards; but this yielded to the ordinary treatment, and she may now be considered out of all danger, though she is not yet reported cured.

THOS. CRAIGIE, M.D.

Leith, 26th May, 1832.

CASE IV.—*In which Saline Injection into the Veins was adopted with temporary improvement, followed by Relapse and Death.—Appearances on Dissection.*

GEORGE COUSINS, aged 10, was brought into quarantine at 9 A.M. 13th May, on account of his mother being ill of cholera. About an hour after admission, began to vomit and purge, and it appears that he has had diarrhœa severely all the morning. Pulse 120, extremely weak; countenance collapsed; areolæ rather dark under the eyes; voice very weak. He had hot air-bath immediately, and got the following dose:—

R Ol. Ricini, ʒss.; Tinct. Opii, gtt. xv.;  
Aq. Mentb. Pip. ʒiss. M. ft. haust.

Half-past 11 A.M.—Draught retained; sickness has gone off; complains of heat of bath. Let it be removed.

Noon.—Has vomited some watery matter, with undigested potatoes in it, and again a rice-watery fluid with flocculi. He has now a considerable degree of jactitation; countenance more sunk, and great desire for cold water.

These symptoms went on increasing in severity, in spite of sinapisms to spine, effervescing draughts, calomel and Dover's powder, warm water enemata, &c. and head symptoms were now making their appearance.

Half-past 2 P.M.—Pulse quite imperceptible, and has been so for an hour and a half. He lies quiet and drowsy, with eyes turned upwards; face bedewed with cold perspiration; hands and feet cold, and very blue.

My colleagues, Drs. Combe and Lewins, saw him with me at this time, and concurred with me in thinking him not only beyond all hope of recovery, but likely to die within an hour or two.

From what I had seen of the resuscitating powers of Dr. Latta's treatment on the boy's mother this morning, by venous injection, I determined on giving it a trial, though this was a case rather likely to bring discredit on the remedy than otherwise. The following solution, at temp. 102° F. was slowly injected into the median basilic, by means of a common silver blow-pipe attached to Reid's enema syringe:—

R Muriat. Sodæ, ʒj.; Carbon. Sodæ, gr. x.; Aq. Calid. 15vj. solve temp. 102°.

3 P.M.—A few minutes after the injecting was commenced the pulse returned to the wrist; the blueness and coldness of the extremities gradually wore off; the countenance was much improved, and the whole fluid was injected within twenty minutes.

Half-past 3 P.M.—He has now a healthy blooming appearance, is sitting up in bed and looking about him as if awoke out of a



dream. Pulse 110, natural; extremities of good colour, and warm; voice much stronger.

Half-past 4 P.M.—Pulse has been gradually falling off since last report; is getting listless, and dislikes to be troubled with questions. Breathing becoming laborious, and head symptoms more marked, with squinting to a slight degree superadded.

7 P.M.—Pulse again imperceptible; respiration quick and laboured; countenance collapsed; tongue and breath cold; says he is dying.

Let the venous injection be repeated to-day.

Half-past 7 P.M.—Pulse immediately returned, of natural strength and fulness, and continues so.

9 P.M.—Lies very quiet; pulse good; breathing more natural; surface of body covered with a warm perspiration.

10 P.M.—Large watery evacuations from the bowels came on soon after last injection. The quantity cannot easily be guessed, but must have been considerable, as it is running through the mattress on the floor. Pulse scarcely perceptible; screams loudly, like a child in hydrocephalus.

11 P.M.—Pulse quite imperceptible; is sinking fast. Venous injection attempted a third time, but desisted from, as it was not productive of the first good effects. Both pupils much dilated. Died at 2 A.M. 14th.

*Dissection 15 hours after death.*—On exposing the brain and spinal marrow, but before opening their investing membranes, the least pressure with the fingers on the middle of the hemispheres of the brain caused a remarkable undulation down to the middle of the hack, shewing the existence of a fluid beneath the membranes, and, on opening them, about two drachms of pure serum flowed out. The surface of the brain was rather vascular, and the blood in the most minute vessels particularly bright; a few ecchymosed spots on its surface. All the other viscera were found healthy. The urinary bladder contained about half an ounce of urine.

THOMAS CRAIGIE, M.D.

Leith, May 26, 1832.

## ANALYSES & NOTICES OF BOOKS.

"L'Auteur se tue à allonger ce que le lecteur se tue à abrégé."—D'ALEMBERT.

*Outlines of Medical Botany, comprising Vegetable Anatomy and Physiology, &c. &c.* By HUGO REID, Member of the Royal Physical Society, and of the Society of Arts, &c. &c.

A VERY good little book—well timed, and well executed. It is divided into

two parts: the former contains a succinct account of the structure and functions of vegetables, sufficiently detailed for elementary purposes; the latter includes an exposition of the natural arrangement of Jussieu, and of the system of Linnæus, with some useful comparative tables, shewing the situation of any plant in either of these classifications. The descriptions are illustrated by means of woodcuts, so that the eye is appealed to at the same moment as the understanding. The student of botany will find Mr. Reid's "Outlines" of considerable assistance to him.

*A Practical Treatise on Uterine Hæmorrhage, in connexion with Pregnancy and Parturition.* By JOHN T. INGLEBY, Member of the Royal College of Surgeons in London, &c. &c.

"*Nec temere, nec timide*," is the motto chosen by the author of this volume—would we could say that it was appropriate. Our duty as impartial critics compels us to express a very unfavourable opinion of this treatise. The views taken by the writer, and the principles he lays down, are generally limited, and frequently erroneous; so that, with every disposition to be lenient, we must caution our readers against trusting to the method of treatment recommended by Mr. Ingleby under the appalling emergencies often presented by uterine hæmorrhage.

*Reports of Medical Cases.* By DR. BRIGHT. Vol. II. Part II. Price 9*l.* 9*s.*

*Phænomena and Cure of Chorea.*

DR. BRIGHT divides chorea into acute and chronic; but we pass by the latter as constituting rather an awkwardness than a disease, being but some gesticulation, independent of the will, and kept up by habit.

The acute form, it is almost superfluous to observe, affects children more frequently than adults, and our author thinks girls oftener than boys, a remark in keeping within our experience. We shall not describe symptoms which we presume to be well known to most of our readers, but confine ourselves to the more formidable or less frequent

modifications of the disease, beginning with the only instance before us in which the malady proved fatal.

Sarah Ford was admitted into Guy's Hospital, when 13 years of age, (Jan. 1825) labouring under well-marked chorea. The July preceding she had had an attack of rheumatism, from which she had entirely recovered. She sometimes had mental delusions, and had suffered about five weeks before her admission from sore throat and globus hystericus. Her spirits and strength were now depressed; she was constipated, and the menses had not appeared. Purgatives, metallic tonics, narcotics, (hyoseyamus with camphor) and the shower-bath, were the chief remedies used, and she recovered so as to be discharged in April. She continued free from complaint for many months, when, from mental agitation, she suffered a relapse; but this was not of long continuance, and she then continued well till about Easter 1829, at which time she met with a severe disappointment, (a love affair) and this was followed by an immediate return of her former complaints.

"She was brought to Guy's, being now seventeen years of age. It was with difficulty she could either stand or sit: she threw herself about in every direction, contracting her mouth forcibly, speaking with the utmost difficulty; and when desired to show her tongue, protruding it most forcibly, and shutting her teeth upon it.

"What mode of treatment was adopted I do not know. She seemed, however, to improve under it at first, but then became worse, and at length could not be taken from her bed: she threw herself in all directions, beating her hands against the boards, which were put to prevent her falling on the ground; and she bit her tongue most dreadfully. She gradually became very low and exhausted; her mouth and teeth covered with sordes; and she had nearly the aspect of a person labouring under fever. She seemed sensible, though, from the difficulty of answering questions, she sometimes appeared incoherent. All these unfavourable symptoms increasing, she gradually sunk.

"*Sectio Cadaveris*.—When the dura mater came into sight, it was obvious that no effusion had taken place into the ventricles, as the convolutions were felt distinctly, and seen through the membrane. The skull was thin, and the sella turcica and other projections of the basis were rather prominent. A small quantity of fluid escaped from a wound made by the saw through the dura mater

into the arachnoid; the effusion, however, was but little; the membranes looked moist, and between the convolutions slightly watery. There was not the least coagulum in the longitudinal sinus, nor in the lateral sinuses, and only a few drops of uncoagulated blood.

"The surface of the convolutions was rather more vascular than usual, as were the processes of the pia mater, which descended between them; but the large veins going into the sinus were empty on both sides. The appearance called the *centrum ovale* was decidedly more dotted with dark points than usual, and they were more permanent, being very evident depressions or holes, the open orifices of vessels; and in many places the knife, which made the cut, left behind it the vessels drawn from their situations like bloody streaks. It was also observable, that on the surface of the cineritious matter, when the pia mater was drawn off, the depressions formed by the vessels entering from the pia mater were unusually obvious.

"The lateral as well as all the smaller ventricles were remarkably free from effusion, scarcely a drop of fluid being found in any of them. The plexus choroides, and more particularly the *velum interpositum*, turgid with blood; the vessels running over the corpora striata and the thalami were full and large. The other parts of the cerebrum and cerebellum were perfectly healthy.

"The spinal cord was most carefully exposed from behind, so that a complete view was obtained of the brain and it, in connexion with each other. The dura mater covering or theca was healthy. The theca was then opened along the back part; a small quantity of fluid escaped, and rather more vascularity than natural was observed. Almost half way down, and from that point to the cauda equina, were seen five or six bony plates, not above the tenth of an inch in diameter, attached to the pia mater by small peduncles, and distended like little fungi, with their tops nearly smooth. The whole pia mater was rather vascular, but nothing like inflammatory appearance or softening could be discovered. The corpora pyramidalia and olivaria, and the upper six inches of the spine, were most carefully examined at the time; the lower part of the spine was opened thirty-six hours after, (having been kept to be drawn,) at which time it had probably become in some degree softened; however, the most careful examination, by cutting into both the columns, gave no indications of disease; but at one spot, not larger than a grain of barley, some faint vascular redness was perceived.

"The lungs and heart healthy; but the heart contained very little coagulated blood, and, together with the aorta and valves, was much stained. The liver healthy, though rather large. Stomach and intestines, spleen,



pancreas, and mesenteric glands, all natural. We endeavoured to trace the ganglia of the great sympathetic in the cardiac plexus, but could discover no particular diseased appearance. The kidneys were whitish, mottled, and rather large in size. I should suspect the urine was coagulable, but there was none in the bladder on which to make the experiment.

"The uterus was rather large, and its cavity was extensive: in the left cornu was a deposit of about as much clear transparent mucus as would cover a sixpenny-piece. The ovary on the right side contained a cyst of the size of a small hazle-nut, full of a tenacious dull red substance, of just sufficient consistence to allow of being cut; the fallopian tube on the same side was quite pervious, admitting of the passage of air from the blowpipe; but it presented a remarkable appearance, having the points of the fimbriated extremities tipped with deposits of semi-transparent bone, looking like large grains of sand, of irregular and rather botryoidal form; and a deposit of the same kind was found on the outside of the broad ligament. The ovary on the opposite side was more healthy, having in it a few vesicular bodies. The fallopian tube on that side had none of the bony deposits. Attached to the ligaments of the uterus on each side was a small vesicle of the size of a pea, hanging by a peduncle, along which vessels were seen to pass."

This is the only case related by Dr. Bright which proved fatal, and in it abundant proofs of uterine irritation were manifested after death. The author, however, speaks of five other cases which he "has known to terminate unfavourably." One was a woman in the Manchester Infirmary, in the fourth month of pregnancy; two others occurred in Guy's Hospital, under the care of Dr. Currie and Dr. Marcet. They were both plethoric, and at the age when uterine irritation was likely to exist. We do not observe that any account is given of the two which remain.

#### *Palsy from Mercury.*

Paralysis is not unfrequently met with in those whose occupations expose them to the continued action of mercury. In many of these instances the metal seems to be brought in its volatilized state into contact with the lining membrane of the lungs; this, however, is not to be regarded as absolutely necessary. Three very good cases are given, in which one of the chief manifestations of the disease consisted in the peculiar jerking,

irregular, and involuntary movements of the hands and arms when the individual was directed to lay hold of any thing—symptoms, it may be observed, which bear some analogy to chorea, and which are always most remarkable when the patient is at all agitated. Due regulation of the bowels, and the exhibition of tonics (sulphate of zinc) generally suffice to cure the disease.

#### *Spasmodic Wry Neck.*

This is a peculiar and interesting affection, which we have more than once seen mistaken for rheumatism of the muscles on one side the neck. It chiefly affects females, and consists in a spasmodic contraction of the muscles, often with much pain, by which the head is dragged awry, and retained in that position for days, weeks, or months. We have seen it last for nearly a year, and then subside. In a fatal case related by Dr. Bright, which occurred in a female sixty-seven years of age, the disease seemed to depend upon an organic change in the theca of the spine, consisting of some effusion under the arachnoid, with congestion of the veins; the diseased structure surrounded many of the nerves at their exit from the spine.

#### *Neuralgia.*

Under this title our author includes several nervous affections, the more active consisting of sciatica, or other painful conditions following the course of particular nerves. It is often allied to rheumatism, but at other times seems entirely distinct from it. The following is at once a brief and sufficiently characteristic illustration:—

#### *Neuralgia cured by Subcarbonate of Iron.*

"George Burney, aged 38, was admitted under my care, February 3, 1830. He had been labouring, for the last three weeks, under most severe paroxysms of acute pain shooting down his legs, apparently from the loins, but chiefly affecting the leg and the back part of the foot; these pains increased towards night. The left leg was most affected, and the pain sometimes seemed to pierce from the heel to the instep. There was no inflammation of the part. I gave a fair trial to colchicum, to the combination of calomel, antimony, and opium, and to purgatives, with no effect: cupping from the loins gave temporary relief two or three times; guaiacum and bark were nearly useless; but by means of the subcarbonate of iron, in doses of half a drachm every three

hours, the pain was quickly diminished, and he was entirely cured in ten days."

Another curious form of neuralgia is that attending *herpes zoster*. Dr. Bright has seen this prove excessively troublesome, and has used various means, with little benefit, for its relief. The carbonate of iron deserves a trial.

*Neuralgic Pain succeeding to Herpes Zoster, cured by Subcarbonate of Iron.*

"Shortly after, another case occurred in an old woman, who was under my care during the whole progress of the disease: the eruption died away in its usual course, but the pains which remained were intense, and the daily complaints were most distressing: opiates were of no avail, and I determined to try chalybeates; accordingly I ordered a scruple of the subcarbonate of iron three times a day, and this I increased from day to day; but the relief was so rapid, that a very few days served to remove the pain entirely."

This is the only case in which Dr. Bright has hitherto tried the iron.

The second form of neuralgia is that more formidable spasmodic, agonizing pain in certain nerves, particularly of the face, which comes on in paroxysms, to which the term *tic douloureux* has been more peculiarly applied. The author regards this as sometimes functional and sometimes organic; a circumstance which serves to account for the great difference in the results of treatment. The remedies which, upon the whole, most frequently succeed, are subcarbonate of iron and the liquor arsenicalis, with due attention to the bowels. Where these fail, some change of structure is to be apprehended, and Dr. Bright has seen at least one case corroborative of the idea of Sir Henry Hallford—that *tic douloureux* is sometimes connected with preternatural growth of bone. The following is such a case:—

*Tic Douloureux depending on a Tumor at the basis of the Skull.*

"Mary Grossmith, aged 40, from West-  
ham, was admitted under my care into Guy's Hospital, in August 1827. She was thin, and her countenance was strongly marked by the effects of long suffering. Her most prominent symptom was extremely acute pain on the left side of her face, which was seldom completely removed, but became more severe in paroxysms. It was regarded as *tic douloureux* by all who had seen her, and resisted all the means employed for her

relief. Within about a fortnight of her death, three molar teeth on the affected side were drawn at different times: after each operation, the pain was for a time rendered less severe, but an offensive discharge proceeded from the wounded gums, and for a few days before her death, a discharge of the same kind took place from the nose also.

*Sectio Cadaveris.*—The membranes about the upper part of the brain offered nothing remarkable, but the quantity of serum, both external to the brain and in the ventricles, was more considerable than is natural. The fifth ventricle was rendered very conspicuous. The brain was softer than in perfect health, and the medullary matter slightly mottled with a light purple cloud. The dura mater, immediately under the anterior part of the left middle lobe, was considerably but irregularly elevated by fungoid tumors, equal collectively to about the size of a pigeon's egg. There was a corresponding depression in the substance of the brain, which at this spot was slightly adherent and disorganized, but not completely softened, nor was the raised portion of the dura mater ulcerated or materially altered. The bone beneath the tumor was diseased, and in some parts offered no resistance to puncture. The morbid growth appeared to have extended from the sphenoidal sinuses. The mucous membrane lining all the nasal cavities on that side were similarly affected, but to a less degree. There was a soft pedunculated polypus of about the size and shape of a raisin attached between the turbinated bones. The branches of the portio dura, so far as they were laid bare in the removal of the diseased parts, exhibited no morbid appearance. (See Cat. Guy's Mus. No. 1667.)

The pleura on the right side was very generally united by old adhesions. The whole lung was rather consolidated there, with one or two immature tubercles of the size of sparrow's eggs at the apex, and milary tubercles were distributed thinly through all parts: the left was much less diseased. The heart was remarkably small. The abdominal viscera were much wasted, and there did not appear to be any fat in the cavity. The peritoneum was free from adhesion, and there was no effusion in any of the cavities of the chest, or in the abdomen. The mucous membrane of the stomach was thin, soft, and a little discoloured; that of many parts of the small, and the first part of the large intestines, was of a grey colour, of different degrees of intensity, from an infinite number of black points. The patches of the aggregate glands were slightly elevated, probably in part owing to the attenuation of the coats of the intestines: the solitary mucous glands were beautifully distinct, raised almost like vesicles, and surrounded by an areola of grey points.

There was nothing remarkable in the other



viscera in this cavity, except that the spleen was small, and the uterus rather large and indurated."

*Hemicrania* is also mentioned by Dr. Bright as coming under the genus neuralgia. Arsenic is the remedy to which he chiefly trusts.

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## MEDICAL GAZETTE.

Saturday, June 9, 1832.

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"Licet omnibus, licet etiam mihi, dignitatem *Artis Medicæ* tueri; potestas modo veniendi in publicum sit, dicendi periculum non recuso."—CICERO.

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### REMUNERATION OF MEDICAL MEN.

THAT "the labourer is worthy of his hire," is a maxim which all are ready enough to admit in the abstract, but which very many seem much disposed to forget, when it is to be practically applied to the members of our profession. There is scarcely a day in which the press does not put forth some gibe in reference to the cupidity of the "doctors," when they do but seek the just reward of their services, or some illiberal insinuation about their living on the distresses of their brethren,—as if they caused the evils which they relieve. Our attention has been called to the subject on the present occasion, by perceiving that certain worthy scribes in some of the countless journals, magazines, and miscellanies, to which the first of June gave birth, have taken the opportunity to reiterate the gross misrepresentations of a contemporary, whose vituperations no one in the profession, and none but the ignorant out of it, ever think of regarding as any thing more than the ebullitions of spleen, or the yet more unworthy proceeding of invective manufactured merely as a saleable commodity.

A new aspirant for fame, in the same walk of literature, has just presented himself; and as he promises a repetition of his lucubrations on the manage-

ment, or rather the mismanagement, of our public hospitals—a subject of which every line shews him to be profoundly ignorant—we shall probably take the liberty, on an early occasion, of bestowing upon him a little wholesome castigation. His great source of quarrel with the medical attendants of hospitals is, that they receive remuneration, though but indirectly, for their services; and this leads us to the only point upon which we can touch at present, but to which we earnestly call the attention of our readers—namely, that the emoluments derived by medical men from the exercise of their profession have diminished, are diminishing, and ought to be augmented.

In considering this subject, the first question we are inclined to ask is—have the members of the profession been true to themselves? Were we to endeavour to illustrate this by facts taken from the records of private practice, we could have no difficulty in shewing that the competition, generated by a limited field, and almost unlimited reapers, too often leads to sacrifices, not to say artifices, in the struggle, which, if they secure to the individual a victory on some particular occasion, do so at the expense of permanent injury on the great scale, even to the successful party. The rule by which a man consents to have his claims and pretensions measured on one occasion, will be applied to him on others; and he who once shews the public that he may be bargained with like a tradesman—that he is ready to undersell his neighbour, and will attend almost for nothing rather than lose "a job," inflicts a wound not only on his own respectability, but upon that of all his brethren. The more high-minded members of our profession may, perhaps, suppose that we are drawing upon our imagination for a subject of declamation, but the experience, or the consciousness, of

others, will convince them that this is not the case. We have known a physician offer to attend for five shillings a visit, to undersell the apothecary, and the apothecary supply his medicines at prime cost to keep out the physician,—and this where the parties who alone were benefitted by this wretched contest were perfectly able to pay, and with incomes perhaps equal to those of both the competitors for their “custom” put together. We blush in recording such transactions; it is our business, however, not to hide the blemishes of our profession, but to expose them, that their existence may be known, and the proper remedies applied. Publicity is the great antidote to any thing essentially mean; and we warn those medical pedlars who hawk their wares for what price they can obtain, that if certain recent exploits be repeated, we shall expose them, that the scorn they excite may prove a warning to others.

But turning from those displays of private rivalry and intrigue, let us see whether the proceedings of our brethren on public occasions be always of the most judicious description, in reference to the value which they place upon their services. Formerly, the medical attendants of most, if not all, of our public dispensaries received some remuneration for their labours; now, there is scarcely one instance of the kind in the metropolis: and the questions naturally arise, if the public be thereby better served, or the character of the medical profession enhanced? We have no hesitation whatever in answering both the queries in the negative. As matters now stand, the governors of such institutions have no claim upon their medical men on the score of obligation—no hold upon them on those common principles of action by which men always have been and always will be influenced. They who know that their services,

which are often of the most laborious kind, are to be gratuitous, will do as little, and that little for as short a time, as they find to answer their own particular purpose. Now this purpose, for the most part, is one merely of individual improvement. A dispensary is regarded as a finishing school, at which the physician or surgeon remains for a few years, and practises on the poor that he may be able to practise on the rich. Not once in a thousand times does he remain to give the former the benefit of the knowledge he has acquired. This may seem putting the matter in a light unfavourable as regards our profession, but it is only the natural course of proceeding, supposing that we are to be influenced by the same motives as other men. As society is constituted, medical practitioners cannot afford to give their services gratuitously longer than such services prove of advantage to themselves.

That the public is not benefitted by this arrangement, it requires no argument to prove. Neither, it is quite clear, is the respectability of the profession likely to be increased by the tacit admission that their services may be had without requital, or by the exhibition so often afforded of eleemosynary institutions, manifestly got up to serve the projector, under the mask of charity. So easy has the formation of these things been, since it became the custom to give all medical attendance gratuitously, that almost every one who is not overburdened with business forthwith sets up a dispensary, infirmary, or asylum; and accordingly we now have something of the kind in nearly every street. If the dispensaries in London were reduced to one half of their present number, and the income at present wasted on house-rent and other appliances, which each requires, was appropriated to bestowing upon the medical men remuneration proportioned to their labours, the poor would



be more carefully attended, and by more experienced men; while the general practitioner would be provided with many a patient, who at present meanly prefers going in his shabbiest coat to a dispensary rather than pay the "Doctor," though perfectly well able to do so: and this we protest from personal knowledge to be an evil very frequently resulting from the present system.

But the fact is, we are not true to ourselves. Could any thing, for example, be more mistaken than the conduct of one of the candidates for the Marylebone Infirmary, who, on the recent vacancy, offered to do that gratuitously, for doing which Dr. Hooper received a good round sum per annum? What! can the largest and most opulent parish in London not afford to pay for the attendance—the daily, the laborious, the responsible attendance upon the poor? It is most unreasonable and unjust to expect gratuitous services,—most unhandsome to allow of it, and derogatory to the character of the profession that it should for a moment have been contemplated. It is all very fine to talk about humanity, benevolence, and so forth: there is neither humanity nor benevolence in such a case. When the baker and the butcher gratuitously provide meat and bread for the living, and the undertaker and sexton find a coffin and a grave for the dead without fee or reward, then, and not till then, will it be reasonable to ask the medical man to attend parish patients without a salary. But then we are constantly told, when we use this argument to men out of the profession, that "there is a mighty difference between the tradesman parting with goods, which he purchases, and the doctor with advice, which costs him nothing." How little reflection is manifested in this remark! Time and knowledge are property—commodities as expensive in purchasing as meat and bread; nor could the

monstrous mistake that they "cost us nothing" ever have been made, even by the most thoughtless, had not the competition resulting from an overstocked profession led many to give their services gratuitously rather than not have them accepted, in the hope that they may indirectly obtain the reward which is denied them as the immediate price of their property; just as where competition of any kind exists, the parties undersell each other often to their own ruin, but always in expectation of ultimately obtaining a return for their outlay. The tax of gratuitous exertion levied on the medical profession is so great, and has endured so long, that, like other familiar things, people cease to be sensible of it; and it is not against its use, but against its abuse, that we would protest. Far be it from us to advocate any doctrine which would tend to deprive the poor man of our assistance in the hour of sickness; or to desire that, as a body, we should yield that high character for benevolence, to which, surely, men are well entitled, who, as a general rule, from the earliest to the latest period of their professional career, are more frequently employed in charitable labours than any other class of society; and who have no other more selfish object than the desire of knowledge, and the rational prospect of making this an honourable passport to worldly advancement. But in these latter days—as man may no longer pluck and eat, as our first parents did—there is a point at which benevolence itself should stop, and that point is transgressed whenever a medical man gives his services gratuitously to public bodies who can pay, and do pay, all but him; or when he consents to receive less than the fair remuneration for his services from those whom avarice, and not necessity, renders thrifty: if the practitioner who does so be a poor man, he injures himself—if a rich one, he is guilty of an act of injustice to his

less fortunate brethren. And yet we appeal to all acquainted with the subject whether this be not very frequently done!

### CHOLERA.

WE this day lay before our readers detailed accounts of some cases in which saline solutions have been injected into the veins of patients labouring under cholera: of these, two occurred in London, and the others in Scotland. Several other instances in which this treatment was adopted within the last few days, have also come to our knowledge, particularly one in Marylebone, and another in Hull, in all of which the patients ultimately sunk under the disease. The proportion of those who have been saved by the saline injection is as yet extremely limited, being less than one-third; but it is to be considered that it has only been adopted in the period of extreme collapse, and under circumstances of a desperate nature. All that we can say for it at present is, that it gives the patient one throw more of the dice for existence; and that when the proper moment has arrived, that chance, however small, ought not to be denied him. But great care should be taken that it be not precipitately adopted, as it carries with it new sources of danger, and produces phenomena of which the patients may die, even if the remedy should enable them to struggle through the immediate effects of the disease. As to the quantity of water used, too, it must not be forgotten that in many cases the collapse takes place without any evacuations; and, consequently, that large quantities of fluid cannot be required to supply a waste which has not occurred.

We understand that mercurial inhalation, in the Indian fashion, was lately tried at Hull, but we have not heard the result.

It is a mistake to suppose that cholera has entirely left London: in addition to the three cases above alluded to, as treated by saline transfusion, we have heard of six or eight more within the last week—some of them severe.

### OF WHAT DID M. CUVIER DIE ?

(From a Correspondent.)

WITH the exception of Magendie, who ventured a broad guess, none of the French physicians even pretend to assign the cause of M. Cuvier's death. Yet their patient did not perish for want of active and energetic treatment. We have before us the exact and very interesting report of M. Rousseau, who was the late Baron's assistant at the Jardin-des-Plantes, and was present *en famille* during the whole time of his patron's illness, being also an eye-witness of his death; and this report appears to us to contain some particulars specially worth attending to: we shall follow M. R. briefly in his relation of the principal facts belonging to each day.

On Monday, M. Cuvier had slight diarrhoea, with disturbance of the bowels, for which he took a lavement, with some drops of laudanum in it. On Tuesday he felt quite well, and gave his accustomed lecture at the College of France with even more than his usual energy; so much so, indeed, that he was *covered with perspiration* at its conclusion. The day was rather cold, and M. Cuvier walked home, contrary to his ordinary custom. He dined as well as usual, and in the evening attended a *soirée* of the Professors, at the Museum, where he talked a good deal. It was on the next morning, Wednesday, that he complained of the stiffness and difficulty of moving his right upper extremity; yet he attended the Council of State, and on his return had an appetite for dinner; but though he could eat his soup well enough, he was surprised to find that it was almost impossible for him to swallow any thing more solid. That night leeches were applied to the anus. On Thursday the right arm was perfectly paralyzed; deglutition was more difficult than ever; but he could walk about very well. The pulse was normal, beating from 80 to 85 in the minute. One



of the medical attendants, however, thought fit, in the course of the day, to bleed the patient largely: *two pounds of healthy looking blood* were drawn from the left arm. A mustard foot-bath was used in the evening, and a large blister applied to the back of the neck. The night was spent very restlessly; and about three A.M. the pulse seemed so hard and full that the attendants were induced to repeat the bleeding, which they now did from the right arm. After this the patient's muscular powers sunk rapidly, though his nervous sensibility and intelligence were not at all impaired. On Friday morning he was ordered a little tartar emetic, which however did not act upwards. His mouth was then observed to be filled with a copious flow of mucous saliva; and this, together with the difficulty which he felt in swallowing the emetic solution, induced the patient himself to remark that he was like a person labouring under *hydrophobia*. In the afternoon, M. Dupuytren, in order to excite the action of the œsophagus and pharynx, threw into the stomach four-and-twenty grains of ipecacuanha, but no vomiting ensued. In three hours after, double the quantity was employed, but without the occurrence even of nausea. At seven in the evening, a strong lavement of salt and water (saturated) was given: this produced a *super-purgation*. Same night, two or three large "English vesicatories" were applied along the course of the cervical plexuses, and the patient was in a most restless condition. On Saturday morning it appeared that the left leg was beginning to be paralyzed. At the patient's earnest request, some *bouillon* was conveyed into his stomach: he was also removed from his bed-chamber into his spacious saloon. The blisters did no good; they did not even irritate the skin. In the course of the day he had given him some iced raspberry-vinegar, and enjoyed comparative repose; but the night brought on much severe suffering. All power of motion and swallowing was now extinct. Twenty leeches were applied to the region of the mastoid processes. "When I saw him on Sunday morning," says Dr. Rousseau, "it seemed as if he had grown on a sudden ten years older; his voice also was wonderfully changed." That day (Sunday, 13th—the day of his death) the patient began to lose all hope. When

any new measure was proposed to him, he shook his head with a desponding assent. He was *cupped on the loins* about noon; and again, about eight in the evening, he was persuaded to suffer himself to be *cupped below the scapulae*. This operation fatigued him greatly. At a quarter to nine he asked the hour, and complained that his faculties were leaving him; "and at a quarter to ten," says Dr. R., "I observed three or four slight motions of the head and a feeble expiration, which I found had deprived the world of a man of vast knowledge and the most extraordinary genius. He died in his arm-chair, sitting erect, with his head neither inclined one way nor the other. His figure was majestic, in the attitude of deep contemplation. So like the life did he seem, that his family would not believe the melancholy fact; but the illustrious patient was no more."

M. Rousseau then goes on to give an account of the post-mortem appearances,—in which there is nothing differs materially from M. Berard's report, of which we gave an abstract in our penultimate number. But the whole of the information that has reached us comes only to this—that nothing could be discovered by the French pathologists to satisfy them as to the cause of M. Cuvier's death. There was *apparently* no organic lesion to which the fatal issue could be traced, unless, perhaps, those curious prominences of the cervical and dorsal vertebræ, which attracted some small degree of attention; but these it was thought had existed so long, and had so little of a morbid character about them, that nobody would venture to assign to them the production of a catastrophe so rapid.

Now the case is, beyond a doubt, a most curiously complicated one, and affords considerable room for conjecture. But there are a few points in it which we think may serve to clear away at least a part of the difficulty. That there was *some* organic lesion present, if but pathology could find it out, is what we will take leave to assume, and what none of the medical attendants seemed willing to deny. Then, from M. Rousseau's shewing, it is more than probable that, on the Tuesday, M. Cuvier *took cold*. We wish to say as little as possible regarding the extraordinary treatment to which the patient was

subjected; but there is one peculiarity more in this matter, which we cannot avoid noticing: M. Cuvier was in his sixty-third year—in (according to “wise saws”) his *grand climacterie*.

We are not inclined to put *much* faith in the climacterical arrangement of human life; nor can we understand—any more than Sir Thomas Browne, who condemns it as a “vulgar error,”—why the ninth septenary period should be considered as so pre-eminently fraught with danger; but the experience of antiquity will have it there is something in the matter that deserves not to be entirely overlooked. Nor can we refuse to lend our attention, moreover, to a learned authority of our own time.

To Sir Henry Hallford the credit is due of having re-called the attention of the profession to the effects of climacterical changes: it was he who first well described that sudden and general alteration of health which occasionally occurs at a certain period of life—any time, as he remarks, between fifty and seventy-five. Now when it occurred to us, at what particular age (63) M. Cuvier died, and at the same time what difficulty there was in attempting to assign any very plausible hypothesis to account for his death, we could not help looking into the learned President's pages\*, for a confirmation of the view which we felt inclined to take of the subject: and certainly there are some points in the essay “on Climacteric Disease,” which deserve more than a passing degree of notice, with reference to M. Cuvier's case; a few of them which we deem most pertinent we shall briefly lay before the reader, and leave the rest to his own leisure and reflection.

“But it is seldom that we have an opportunity of observing this malady in its simple form; and never, I believe, but in a patient whose previous life has been entirely healthy. We find it generally complicated with other complaints, assuming their character, and accompanying them in their course; and perhaps this may be the reason why we do not find the climacteric disease described in books of nosology as a distinct and particular distemper. It blends itself with the effects of any fixed organic mischief in the constitu-

tion; takes on the appearance of any periodical irritation to which a patient may have been subject, or adopts the features of a casual disease. When it is associated with organic mischief, it is difficult to distinguish the climacteric complaint from that train of symptoms which commonly supervenes, sooner or later, on diseased structure; but its presence ought to be suspected if the complaints are all unusually exasperated—if a fatal result be threatened earlier than is usual in the common course of things; and, above all other indications, if that character be impressed on the countenance which peculiarly distinguishes this disorder.”

Again, Sir Henry observes, “of the various immediate causes to which this malady may owe its commencement, there is none more frequent than a *common cold*. When the body is predisposed to this change, any occasion of feverish excitement, and a privation of rest at the same time, will readily induce it.”\* \* \* \* “A fall, which did not appear of consequence at the moment, and which would not have been so at any other time, has sometimes jarred the frame into this disordered action.”

And with reference to the suggestion which we ventured to offer above, as to the *remarkable* treatment employed in M. Cuvier's case, we shall make one short extract more, and have done. “Physicians will not expect me to propose a cure for this malady. In fact, I have nothing to offer with confidence in that view beyond a caution that the symptoms be not met by *too active* a treatment. Whatever would weaken the general system must be detrimental; and it seems, in all cases of this kind, more prudent to direct local than general evacuations for the relief of occasional congestions in the blood-vessels.”

## CUVERIANA.

### *Measurement of the Head.*

IN a former number we gave the weight of M. Cuvier's brain; we can now state, from M. Rousseau's notes, the dimensions of his cranium. The head having been shaved, the measures were as follows;—

\* Essays and Orations, by Sir H. Hallford, Bart.

Greatest circumference, 22 inches 4 lines.



From the occiput fossa to the root of the nose, over the vertex, 13 inches 4 lines.  
From one meatus auditorius ext. to the other, over the vertex, 15 inches.

We are not informed of the measurement of the facial angle; but it was much developed. Moulds of the head and entire bust have been taken.

It may be worth mentioning, that M. Rousseau's note of the weight of the brain makes it an ounce heavier than it is stated to be by M. Berard. According to M. R. the weight of the cerebellum was 5 oz. 1 dr.; of the whole brain, including the cerebellum, 3 lbs. 14 oz. 4½ dr.

M. Rousseau adds, that the parietes of the cranium were generally moderate in their thickness; that, in some places, they were even delicately thin; and that, on the whole, he never remembers to have seen a skull more symmetrical.

#### *Cuvier's Income.*

The whole amount of the late Baron's income did not exceed 1680*l*. The following may be considered as a correct list of those appointments from which he derived any emolument. He received as

|                                     | Frs.   |
|-------------------------------------|--------|
| Member of the University Council,   | 12,000 |
| Counsellor of State.....            | 10,000 |
| Professor to the College of France, | 6,000  |
| ———— Jardin du Roi.....             | 6,000  |
| Member of the Acad. des Sciences,   | 1,000  |
| Perpetual Secretary to ditto .....  | 6,000  |
| Member of the Acad. Française ...   | 1,000  |
| In all, 42,000 frs. per annum.      |        |

#### JEREMY BENTHAM.

THIS very eminent man died on Wednesday last at his house in Queen-Square, Westminster: he was in the 85th year of his age. We cannot do less than record his demise—as we do with unfeigned respect—for he was always a well-wisher, and an able advocate, of our profession, and testified his regard for its pursuits by the bequest of his body for anatomical purposes. Dr. Southwood Smith is the favoured individual whom he appointed to carry that object into effect.

#### SIR JAMES MACKINTOSH.

PERHAPS we ought not to close our obituary without also noticing the death of this distinguished man, which took place early in the last week. About fifty years ago he took a degree in medicine at Edinburgh; and just at the close of his studies was offered an appointment at the court of Russia, which, however, he declined, having never, we believe, devoted much time or attention to the practical part of his profession. The appointment was then given to Sir A. Crichton, who remained many years at St. Petersburg. Soon after this, Sir James Mackintosh abandoned medicine, became a literary man, and studied law. It would be foreign to the objects of this journal to follow his career any farther, particularly as we are not aware that in his parliamentary, or any other capacity, he ever evinced any zeal for the interests of medical science. During his later years he had become hypochondriacal, and on several occasions on which we met with him he always took the opportunity of asking us to feel his pulse.

#### MEDICO-CHIRURGICAL SOCIETY.

Tuesday, May 8, 1832.

MR. LAWRENCE IN THE CHAIR.

#### *Malignant Diseases.*

THE second part of a paper by Mr. Travers was read by the secretary (Mr. Partridge); it treated of the subject of malignant diseases, including all those of a cancerous or schirrous nature affecting either the exterior or interior of the body. Another portion of Mr. Travers's communication still remains for perusal on a future evening, but from the very elaborate nature of the paper we think it better not to attempt any account of it till we have the advantage of seeing it in print.

After some remarks from Mr. LANGSTAFF, on a passage in the paper in which hydatids were mentioned, and which he (Mr. L.) would prefer to denominate serous cysts,

THE PRESIDENT, with reference to Mr. Travers's observations on cancer of the uterus, expressed a wish that his friend the secretary (Dr. Lec), would state the result of his experience as to the nature of that complaint, and its most usual initiatory symptoms.

Dr. LEE was of opinion that the complaint was by no means of an inflammatory nature in its commencement; it began in the part

from some disposition in the texture, but inflammation was not present. It was certain that local bleeding and antiphlogistics produced not the least effect upon it. The most usual period for the occurrence of the disease was about the age of from forty-five to fifty. He had seen it in a young woman, indeed, of eighteen, whose uterus was completely filled with a malignant fungus. That very day he had opened the body of a woman who had died of the disease. There was nothing, he said, very peculiar in the case; the deceased was about fifty years of age, and the morbid structure in that phagedenic ulcerated condition which is usually met with; but the case he thought worth noticing for another circumstance;—the deceased had two swelled legs from *phlegmusia dolens*, and upon examination, it was found that the external, middle, and internal iliac veins on both sides were impervious, from plugs of effused lymph with which they were filled for a considerable portion of their length; and this was the sixth case in which he had observed the same phenomena.

SIR CHARLES BELL desired to know how long such a condition might have existed during life in the case just mentioned by Dr. Lee; and how the circulation in the parts was performed.

DR. LEE did not consider the peculiarity in question as incompatible with even a protracted continuance of life. The circulation was maintained through the collateral branches.

A paper was then read from the pen of Mr. Howship—

*On the Phenomena and Appearances induced by Partial Obstruction in the Cerebral Circulation.*

Two interesting cases were detailed by the author, the first demonstrating the consequences of inflammation of one or more of the large superficial veins of the brain. These consisted chiefly in an injected state of all the capillaries, which had to pour their blood into the obstructed vessel, giving to the brain in the vicinity a peculiar variegated appearance when cut across, as if studded with numerous dark points. An approach to the same condition is represented in one of Dr. Hooper's plates of the Brain, and the appearance is still more closely seen in an engraving in Dr. Bright's work.

The other case was that of a patient who had laboured under bronchocele for above fifty years. The enlargement of the gland was very considerable, and on the right side was seen the trunk of the common carotid very much enlarged, lying close under the integuments, and pulsating with amazing force, while the carotid on the left side was quite quiet. Mr. Howship conjectured that the great impediment to the return of blood

through the jugular vein, which was stretched and flattened over the surface of the tumor, had caused the necessity for this increased excretion of the carotid. At first sight it would have seemed, from the carotid running over the projecting surface of the tumor, that it must have been elongated, to accomplish the apparent circuit; it was found, however, on measuring them after death, that the vessel on both sides was the same, but that the manner in which the innominata was formed admitted of the carotid taking the above course, without any absolute elongation as compared to the other,

### COMPLIMENT TO MR. WHITMORE.

WE omitted to state in our last, that Mr. Whitmore has also been awarded a donation from the Magistrates of Middlesex, for his attention to the cholera patients in the prison of Cold-bath Fields.

### METEOROLOGICAL JOURNAL,

Kept at EDMONTON, Latitude  $51^{\circ} 37' 32''$  N.  
Longitude  $0^{\circ} 3' 51''$  W. of Greenwich.

| May 1832.      | THERMOMETER.  |    | BAROMETER.     |       |
|----------------|---------------|----|----------------|-------|
| Thursday . 31  | from 38 to 65 |    | 29.57 to 29.45 |       |
| June           |               |    |                |       |
| Friday . . . 1 | 43            | 59 | 29.56          | 29.61 |
| Saturday . . 2 | 35            | 68 | 29.66          | 29.84 |
| Sunday . . . 3 | 49            | 69 | 29.76          | 29.54 |
| Monday . . . 4 | 49            | 63 | 29.46          | Stat. |
| Tuesday . . 5  | 48            | 63 | 29.46          | 29.53 |
| Wednesday 6    | 45            | 61 | 29.46          | Stat. |

Wind variable, N.E. and S.W. prevailing.  
Except the 2d instant, generally cloudy, with frequent showers.

Rain fallen, .825 of an inch.

CHARLES HENRY ADAMS.

### BOOKS RECEIVED FOR REVIEW.

A. Cornelii Celsi de Re Medica Libri Octo, ex recensione Leon. Targæ; accedunt J. Rhodii Dissertatio de Celsi Vita, Schillingii Quaestio de Celsi Aetate, L. Targæ Prefatio et Index Libb. MSS. Editorumque, Excerpta de Balneis, de Ponderibus et Mensuris Romanis monitum breve, cum Conspectu Capitum. Præfixis Characterum, Balnearum, Instrumentorumque Tabulis. Editio Secunda, accuratissime emendata, opera et studio Georgii Frederici Collier, ex Aula Magd. Oxon., c Colleg. Reg. Medic. Lond., et ex Acad. Lugd. Bat. M.D. 1 vol. small 8vo.

The same in English. 1 vol. small 8vo.

\* \* \* The above was received some time ago, but had been mislaid.

W. WILSON, Printer, 57, Skinner-Street, London.